CHEMICAL MARKETS

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The Mills of the Gods

UNLESS Major Chester P. Mills is a worthy object of charity, Mr. Durant has thrown twenty-five thousand dollars in the air without even the satisfaction of having made an impressive gesture. The erstwhile Prohibition Administrator of New York is to be congratulated upon his luck, and the blame (only Mr. Durant may becomingly lodge this complaint) attaches solely to the distinguished, but ignorant judges who made this delicious award.

PROHIBITION enforcement is a matter of business concern to the chemical industry, since the permissive clauses of the law, which guarantee to legitimate consumers an adequate supply of that essential chemical raw material ethyl alcohol, are affected by the prohibitory sections. The two are inextricably tangled. Apparently it must always be so. Facing this situation, the industry has wisely elected to cooperate actively with every Prohibition official who has shown appreciation of the real industrial problems involved and who has been intelligent enough to enlist their aid. As a result of this kind of co-operation with Commissioner Doran, the diversion of industrial alcohol has become a negligible source of bootleg liquor. The alcohol distillers have submitted to a voluntary curtailing of their output to a total not exceeding the legitimate needs of the country. This has meant a net loss in production of some 8,000,000 gallons. They have assisted in the reduction of the independent denaturing plants to half a dozen for the whole country and these so carefully supervised that the leakage to illegal channels is admittedly insignificant.

THUS, all that Major Mills so glibly suggested has already been accomplished. But the result does not justify his conclusion. He forecast that when diversion was stopped, then the price of liquor would be forced so high that the demand would cease. He overlooked the well known economic law that a high price but brings other producers into the field. Accordingly, when the re-naturing of industrial alcohol became too costly and too risky, illicit distilling from corn syrup, molasses, even from sugar began to supply the bootlegger's demand, eked out by easier importations from Canada.

MR. DURANT'S prize has quite unintentionally emphasized the constructive work the chemical industry has been doing with the present Prohibition Administration. In the bright glare of newspaper publicity, Caesar's wife has been proved above suspicion. This is quite as it should be. And it emboldens us to add to Major Mills' one sound suggestion that prohibition be divorced from politics, the further amendment that it should not be wedded to propaganda.

"See American First"

WARRIOR, hunter . . . statesman, orator . . . fierce, nomadic . . . was the red man, misnamed Indian. He enjoyed exclusive occupancy of the whole American continent for at least a thousand years. His supremacy, wrested from a prehistoric race, was in turn lost to a superior civilization. Successive waves of white men submerged him, yet even today there are 180,000 full blooded Indians in the United States.

INDUSTRY classifies Alcohol as an essential ingredient . . . a basic factor in production. Use of the highest quality therefore is implied.

"American" meets this demand. In fact the standards maintained by this important organization are more rigid than those required by most manufacturing processes.

There is a plus-quality to "American" Alcohol, partly due to an exclusive process, originated in our laboratories. It is a source of profit and satisfaction to users, standing for dependability . . . for process results which directly increase the quality of your products.

When Alcohol is needed it best serves your interest to "See American First."

AMERICAN DENATURED ALCOHOL

MANUFACTURERS, BY AN EXCLUSIVE PROCESS, OF EVERCLEAR ALCOHOL THE ABSOLUTELY PURE, ODORLESS, COLORLESS ALCOHOL

"SEE AMERICAN FIRST"

COMMERCIAL ALCOHOL CORPORATION

420 Lexington Avenue, New York, N. Y.

Plants:

Pekin, Ill. Philadelphia, Pa. Gretna, La.

Prophecying Profits

This is the open season for business forecasting. From Mr. Distinguished Financeer, director of a dozen big corporations, to Jimmy Hackwriter, who helps fill up the magazine section of the Sunday newspaper, few are courageous enough to resist the temptation to throw the mantle of the soothsayer lightly over their shoulders and vent an opinion on the economic future. We no longer study the entrails of poultry. The juggling of sacred knuckle bones is out-of-date. Tea leaves, Sybilline books, and oracular statements from blessed spring or holy cavern, none of these are the basis of present-day prophecy. But give any one of our distinguished amateur (or professional) business prophets the carloadings of peanut hulls at Omaha; the population of twenty representative night clubs; the consumption of palm leaf fans in Greenland; the production of soap chips; cigarette holders; .22 cartridges; or what have you in fancy or plain statistics; and they will predicate upon them an unprecedented era of prosperity. Out of such materials are heaped up a great pile of "special reviews", "trade surveys", and "annual forcasts", representing a vast stock of misdirected energy and wasted time.

Ridiculous as a lot of this commercial soothsaying is, there has been developed a technique by which the business future may be foreseen—for a few months ahead—and a method of mapping charts by which the course of business may be steered. There is nothing of necromancy is this procedure. The task calls for no second sight. It consists of the rather costly and extremely exacting labor of collecting industrial data.

One of the big alkali companies, for example, has for several years plotted the curves of chemical demand within its own field so accurately that the production program of the plant is based directly upon these statistics. It has never been askew more than a fraction of a per cent. of the tonnages involved. Another industrial chemical corporation has turned its statistical data to sales rather than to production problems, with the result that it not only bases sales quotas, but also estimates its gross sales with an accuracy that delights the comptroller and confuses the sales manager. These are but familiar examples of what is being done. Doubtless work of this kind is susceptible of great extensions. If one doubts the value of such forecasting, let him remember that the most outstandingly successful investment trusts actually invest their funds upon the results of painstaking study of industrial statistics of this kind, and the telephone company, in planning for expansions, has been able to estimate ten years in advance the probable population within four per cent. of correctness.

In the chemical field especially one warning is needful. The best plotted curves are liable to be upset by new processes or new products. But within reasonable limits of time, such prophecies, carefully and continually checked up, are an infinitely more reliable guide than the personal judgment of even the most astute executive, a much more dependable basis for decision than the collective hunches of even the most experienced boards of directors.

Small Plant Efficiency

K. M. H. is a new symbol in industrial management, a measure of the profitable employment of labor in terms of kilo-man-hours. Searching study of thousands of corporation records by two mechanical engineers and severe tests in 13,385 plants representing over a hundred different types of industrial activity, have resulted in this index of efficiency which promises to be a most useful gague. Already it has revealed some unexpected results.

It is the general impression that the efficiency of the small plant is far below that of the larger unit. Big scale production is popularly regarded as low cost production. Yet the supposed wastefulness of the smaller companies has proved to be a myth when measured by this new yardstick. In 35 out of 53 industries studied by Messrs Alford and Hannum, the smallest company in the group was found to have a higher production rate per man employed than the largest company. Conversely in only three industries did the largest company prove out to be the most economical producer.

These facts are so directly opposite to the commonly accepted theory that they seem revolutionary, yet they reveal a secret that has long been suspected by those who have watched the smaller companies flourish even under the very walls of bigger competitors who always appeared to be on the point of obliterating the tiny rival. The natural economic forces working against any monopoly have in the relatively high efficiency of the smallest plant a strong ally in curbing the ill effects to what has been jocularly dubbed "mergeritis".

Progress

A patent may be regarded from two points of view. From the one it is a device encouraging invention: from the other it is a contract between all the people and the inventor. For the patent is essentially an agreement on the part of the Government to grant exclusive rights of manufacture, sale or use for a limited period of time to the inventor in return for his disclosure of his invention. This disclosure he makes before the rights are granted. If his rights are not adequately protected by the Government he is doubly defrauded and quite without redress.

Both the process and the products of the chemical industry are the subject of innumerable patents, and few industries indeed have a greater stake in patent rights. It is therefore, a matter of importance that these rights be adequately protected, not only to conserve present investment, but also to assure the reward of future developments. We do not fancy the role of alarmist, but if fear is the only way to arouse the chemical executive to sinister forces at work to destroy the proper encouragement of the inventor by breaking the compact the whole people have made with him, then we must sound a tocsin from the housetops. We do not believe such ballyhoo methods are needed. If any executive doubts the importance of patents or the reality of this problem we commend to his attention the first article in this issue in which one of our most distinguished technical experts, with many years practical experience in patent litigation, ploughs up some rich soil in his study of the "seeds of progress".

Quotation Marks

The four principal manufacturers, du Pont, Allied Chemical, American Cyanamide, and the coke oven industry, display considerable agreement in painting a gloomy picture for the future of others entering the nitrogen industry. While this may be a means of self-preservation, they differ in this respect notably from the cheerful optimism of their British and European counterparts. It seems evident that although du Pont at present consume most of their own "smoke", and the Allied Chemical in producing sodium nitrate are aiming at the Chile target, both are preparing for the time when the American fertiliser tap can be turned on.—*Chemical Age.*

Chemical industries are likely to draw more and more closely toward the coal fields. We can hardly conceive of conditions arising under which localities where coal is situated will not grow in importance. Whatever may happen in other parts of the country, we can prophesy with complete confidence that those regions where soft coal is to be found will enjoy an ever-increasing activity and probably an expanding prosperity.—*Thomas S. Baker.*

General business can be permanently prosperous only when millions of people have buying power. It is "companionate prosperity", based on the buying power of the masses, because for any one of us to enjoy the greatest possible permanent prosperity, the masses of our citizens must have buying power.—*Edward A. Filene.*

The causes of evolution probably will never be known to us, any more than causes of gravitation.—*Henry Fairfield Osborn.*

Economic prosperity is not the sole object of government or of effort.—*Herbert C. Hoover.*

No successful boy ever saved any money.—*Henry Ford.*

Ten Years Ago

From "Drug and Chemical Markets", January 1919

Liberty Potash Co. organized with $11,000,000 capital to exploit potash deposits in Wyoming.

E. I. du Pont de Nemours Export Co., Inc., is formed with headquarters in New York.

James A. Dowd becomes vice-president and general manager, Jordan Coal-Tar Products Co., New York.

Monsanto Chemical Works announces intention to manufacture caustic soda during coming year.

Koppers Products Co., Wilmington, is incorporated with capital of $50,000.

Aniline Dyes & Chemicals, Inc., New York, increases capital from $800,000 to $1,000,000.

Monsanto Chemical Works purchases building at 12 Platt st., New York, as headquarters in that city.

Cook & Swan, Inc., is organized in New York by merger of Alden S. Swan Co. and Cook Oil Co.

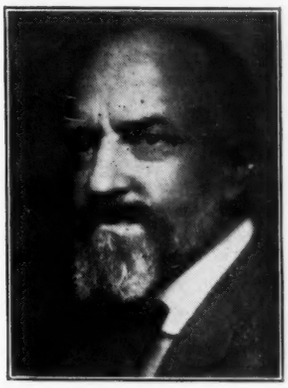
Henry Heil, president, Henry Heil Chemical Co., St. Louis, dies January 6, aged 65.

P. J. Kayser, formerly sales manager, chemical department, C. H. Howe Co., New York, enters general brokerage business.

Dow Chemical Co. establishes branch office in New York, with H. D. Anderson in charge.

THE SEEDS OF PROGRESS

By William M. Grosvenor



Cynical wit has branded a U. S. patent as a "right to fight", and when the Supreme Court holds valid only one invention in eight it raises a grave question as to the security of property rights which Dr. Grosvenor's searching pen reveals as of vital concern to our chemical industries.

IF our ancestors dropped from the trees with fragments of their former home for clubs with which to face the beasts of the jungle, an inventive thought then started mankind on its conquest of the globe. When their descendants first hardened by fire the charred end of a stick for a lance or javelin, invention was prodding mankind on to his conquest of the forces of nature. Invention has gradually converted communicative grunts and growls into the power and melody of speech and song. Invention developed the notches on a stick and the scratches on tablets of baked clay into literature and libraries. Invention has turned the shelter of the hollow tree and the cave into the palatial home and the skyscraper. It has given us not only our languages, our weapons and our houses, but also our transport on land, sea and air; our money, banking and exchange; our rapid communication by light, wire and wireless; our thoughts, our cultures and even our religions. It has thus made us all that we are.

But think how slowly! It took many thousands of years of repeated rises toward civilization and relapses toward barbarism. Ask yourself why. Remember that the law of supply and demand is one of natures fundamental reversible laws. What did the maxim of the little centuries mean, that "necessity is the mother of invention"? It meant that there was little or no secure inducement to invent except dire necessity.

When mankind learned that a demand and reward created a supply, inventions became for the first time consciously the garnered and nurtured seeds of progress. Only when an invention came to be regarded as a kind of property, intellectual property, did progress come in the geometrical leaps and bounds that characterize the last two centuries in countries where the individual could protect the property he created.

The patent system, itself, is an invention for fostering invention.

Only when intellectual property becomes as respected in the mind of man as tangible property, can we hope for continued progress up beyond the cycles of material despotism and decay that we have hitherto been leaving behind us, stratified upon one another in the ruins of long forgotten civilizations of the past.

What is Property ?

Property is defined as "an essential attribute", "a right of ownership" or "a thing exclusively possessed." Man has but one sort of property which is his property in all three senses, and that is intellectual property in a novel idea. It is an essential attribute of the man. It is his right of ownership, for no outside power can take it away from him unless he gives it up. Finally it is exclusively his; to use, to cherish in secret, or to destroy by forgetting it. No other property is as essentially his except himself, for it is part of himself; created by him and, if novel, shared in no manner by anyone.

I may inherit, gamble on the Street, (or even defraud or steal, as long as funds cannot be directly traced) and with these gains I may purchase *tangible* property, real or personal. To this *tangible* property the mind of man and the law of man instantly recognize my title. Society is organized to protect it because each man also needs protection for his own property. Widely distributed ownership of such property tends to protect us from revolution and from crimes against the type of property widely held. But all men do not have new ideas or, if they do, lack the necessary initiative to do anything about it. Hence it arises that the average man is indifferent to rights of intellectual property. His ox is not gored. As one wit remarked, "Intellectual property ? *He* doesn't even know what it is!" So it comes about that the average man does not realize these facts about invention which has given him the world of to-day, which may give him a vastly easier more effective world of to-morrow, and which history indicates is perhaps the only thing that can prevent his descendants from relapsing into barbarism.

Unless intellectual property can be well secured, at least for a reasonable development period, there is no

Tabular Comparison of Revolutionary Inventors

This table was compiled to ascertain the facts, not to prove a theory. While neither complete nor checked for accuracy in detail, no outstanding revolutionary invention has been omitted intentionally. Inquiry was limited to patents filed since 1889 because that ushered in large corporate investigation. "I. I."—independent inventor or research; "*By*"—initiated in and developed by a manufacturing corporation, "(?)"—uncertain.

Name	*Subject*	*Date Filed*	*Employment*	*Assignee*
Lanston	Monotype, Printing	8/11/90	I. I., Clerk	
Frasch	Sulfur Mining by Wells	10/23/90	I. I., Oil Chemist	Union Sulfur Co.
Harvey	Case Hardening Steel	4/1/91	I. I., Steel Mfr.	
Ives	Photogravure	8/4/91	I. I., Photographer	
Edison	Movie Camera	8/24/91	I. I.	
Strowger	Dial Phone	2/19/92	I. I., Undertaker	Strowger Aut. Telephone Ex.
Willson	Calcium Carbide	8/9/92	I. I., Elect. Engr.	
Diesel	Diesel Engine	8/26/92	I. I., Engineer	Diesel Co. organized
Castner	Mercury Caustic Cell Br.	9/7/92	I. I., Dir. Al. Co.	
Hargreaves	Diaphram Caustic Cell Br.	10/10/92	I. I., Chem. Mfr.	
Gayley	Dry Air Blast Furnace	1/6/94	Supt. Bl. Furnace (Carnegie)	(?)
Acheson	Carborundum	6/25/94	I. I., Electrician	Carborundum Co.
Jenkins	Movie Projector	11/24/94	I. I., Stenographer	Jenkins & Amat.
Acheson	Graphite, Artificial	12/27/95	I. I., Mfr. Carborundum	
Curtis	Stage Turbine	1/13/96	I. I., Elect. Mfr.	Curtis Co.
Claude & Hess	Acetylene-Acetone Soln.	3/1/97	I. I.	Bruno Abakenowicz
Marconi	Radio Telegraph Br.	12/10/97	I. I.	Wireless Tel. & Sig. Co.
Wood	Stereotyper	3/4/98		(?) Campbell Ptg. Press & Mfg. Co.
Hewitt	Mercury Vapor Lamp	4/11/98	I. I.	Cooper Hewitt Elec. Co.
Sprague	Electric Train Control	4/30/98	I. I.	Sprague Electric Co.
Knietsch	Contact Sulfuric	7/14/98	Chemist	*By* Badische
Frank & Caro	Cyanamid	12/20/98	I. I. Research	
McFeely	Pulling Over Machine	9/19/99	(?)	(?) United Shoe Machinery Co
Taylor & White	High Speed Steel	10/20/99	Engineers	*By* Bethlehem Steel Co.
Pupin	Loading Coils	12/14/99	I. I., Prof. Phys.	
Jacobs	Alundum	5/4/00	I. I., Cons. E-Chem.	General Electro-Chem. Co.
Lubbers	Glass Blowing Machine	9/28/00		
Coleman	Electric Starter	2/11/01	I. I.	Rockaway Auto Co.
Bohn	Vat Dyes	2/25/01	Chemist	*By* Badische.
Holland (or Lake)	Submarine	9/7/01	I. I., in either case.	
Gillette	Razor, Safety	12/3/01	I. I., Author	Federal Trust Co.
Ostwald & Brauer	Synthetic HNO_3 (from NH_3) Br.	1/9/02	I. I., Prof. Chem.	Nitrogen Prod. Co. (Eng.)
Wrights	Airplane	3/23/03	I. I., Bicycle Shop	
Owens	Bottle Machine	4/13/03	I. I.	Toledo Glass Co.
Birkland-Eyde	Synthetic HNO_3 (Arc)	6/15/03	I. I., Prof. Physics	Birkland-Eyde Co.
Fessenden	Radio Telephony	8/8/03	I. I., Elec. Eng. Agt. U. S.	Nat'l Elec. Signal Co.
Welsbach	Pyrophoric Alloy, Sparking	11/27/03	I. I.	Tribacher Chem. Co.
Fischer	Barbital	1/27/04	I. I., Prof. Chem.	E. Merck Co.
Eastwood	Lifting Magnet	12/27/04	(?)	
Colburn & Washburn	Sheet Glass Machine	12/28/04	I. I.,	Colburn Machine Glass Co.
Sulman, etc.	Air Froth Flotation Ores	5/29/05	I. I., Engineers	Minerals Separation Ltd.
Acheson	Carborundum Brick	9/23/05	I. I., Acheson G. Co.	
Einhorn	Novocaine	11/8/05	I. I., Prof.	Meister Lucius & Brüning.
Dunwoody	Crystal Detector Radio	3/23/06	I. I., U. S. Army Officer	
Dorr	Ore Classifiers	5/18/06	I. I., Mining	The Dorr Co.
Coolidge	Ductile Tungsten	7/2/06	Phys. Chemist	*By* General Electric Co.
Eibel	Fourdrinier Screen Slope	8/22/06	I. I.,	Eibel Process Co.
Acheson	Deflocculated Graphite	9/22/06	I. I., Acheson G. Co.	
DeForest	Grid Tubes, audion radio	1/29/07	I. I.	De Forest Radio Telephone Co.
Gans	Zeolite Water Softening	2/18/07	I. I., Academic	J. D. H. Ak. Gas., Permutit Co.
Cottrell	Electric Precipitation	7/9/07	I. I., Univ. Prof.	Internat'l Precipitation Co.
Baekeland	Bakelite	10/15/07	I. I.	The Bakelite Co.
Oliver	Continuous Vacuum Filter	9/8/08	I. I., Metallurgist	Oliver Filter Press Co.
Perkins	Vegetable Veneer Glue	11/2/08	I. I., Mfr.	Perkins Glue Co.
Haber & Rossignol	Ammonia Synthesis	8/13/09	I. I., Professors	Badische.
Ehrlich & Bertheim	Salvarsan, 606	10/26/10	I. I., Research	
Sperry	Gyro-Compass	6/21/11	I. I., Elec. Mfr.	Sperry Gyro Co.
Hoerlein	Luminal	9/6/11	I. I., Professor	Bayer Co.
Eldred	Leading in Lamp Wires	10/26/11	I. I.	Commercial Research Co.
Burton	Oil Cracking, Pressure	7/3/12	Chemist	*By* Standard Oil of Ind.
Hoffman & G. (or Spence)	Rubber Accelerators	12/25/12	Chemists	*By* Bayer (or Diamond Rubber Co.)
McAfee	Oil Cracking, Al_2Cl_6	9/13/13	I. I., Texas Co.	Gulf Refining Co.
Armstrong	Radio Regen. Circuits	10/29/13	I. I., Professor	
Hansen & Weindel	Acetic from Acetylene	1/16/14	I. I.	Bayer: Synthetic Pat's Co.
Heyl	Alloy Contact P'ts. Pt. Ag.	3/20/15	I. I., Phys. Research	Commercial Research Co.
Emmett	Mercury Boiler	11/29/15	Engineer	*By* General Electric Co.
Elmen	Permalloy	7/24/16	Physicist	*By* Western Electric Co.
Weizmann	Butanol	12/26/16	I. I.	Commercial Solvents Corp.
Gibbs & Conover	Naphthalene to Phthalic	2/17/17	I. I., U. S. Chem.	U. S. Government.
Schaub	Nitrocel. Solid Alcohol	7/17/17	Mechanic for	(?) Basic Products Co.
Honda	Cobalt Magnet Steel	10/22/17	I. I., Professor	Sumitoso Ch. Ltd.
Patrick	Silica Gel	12/17/18	I. I., Professor	
Midgley	Anti-knock Compound	4/17/21	Chemist	*By* General Motors Corp.
White	Mercurochrome Antiseptic	7/6/21	I. I., Professor	
Patart	Synthetic Methanol	8/19/21	I. I., Fr. Bur. Expl.	

Decades; from 1890 to '99 inc. 2 or 5 "By" out of 25 outstanding; from 1900 to '09 inc. 2 out of 30; from 1910 to 1929 inc. 4 or 5 out of *only* 17. Number of U. S. patents issued in each decade respectively were 221,501; 304,843 and 381,889.

inducement of reward and little inducement of credit for the individual to think of improvements, sacrifice for experiment, invent, and again sacrifice to lay the foundation of an industry for others.

Unless there is security in intellectual property no group of business men and investors is warranted in building an industrial and business structure thereon. They would be foolish to undertake the effort and expense of introducing the invention and educating the users. Why ? Because any fly-by-night imitator, without the handicap of interest and amortization charges on the initial and development expenses, can make a profit at the actual cost of the pioneer and can drive him out of the business he has risked the time and money to build up.

Who Will Pay For Development ?

The individual inventor may be fooled and still keep on inventing, but the banker and capitalist usually take every precaution not to be. In the absence of a secure title, we can readily see why inventions made by individuals who cannot afford to finance their own fads, will generally remain fruitless for years. All kinds of property whether real, personal or intellectual, require development and care which no one will find it worth while to give without some security of title. Who will build anything better than a shack on land where he has no rights ? Who will plant and cultivate for some unknown interloper to reap ?

The natural consequence will be that invention and development will be gradually and increasingly left to the corporations which have means and power to protect themselves in purely commercial ways. Let us inquire how much freedom of individual initiative, enthusiastic encouragement of radical ideas, personal pride in individual success corporations offer the employee who makes a *pioneering** invention. How many of the valuable inventions used by U. S. Steel, Ford, General Motors, American Wireless, American Telephone and Telegraph, the aeroplane companies or even the General Electric have made rich an *employee* who, when he made the invention, was not an officer or a very large stockholder ?

Thirty years of observation and research in patent matters convince me that the proportion of *revolutionary* improvements, which is initiated by large corporations is relatively small. I have even seen the lines of progress that were most promising for the public benefit, wholly neglected or positively forbidden just because they might revolutionize the industry. We have no right to expect a corporation to cut its own throat from purely eleemosynary motives. Such a thing is contrary to its habit of thought, method of working, and economic policy. It means the obsolescence of all the corporations stand for to-day. "A prophet (radical inventor) is not without honor save in his own country (company)," is still true in most cases and quite naturally. Development research, organization, improvements, refinement, great enlargement, economies, broadcast advertising and merchandizing—yes, to all these; but to *pioneering*, emphatically no, in most cases. Why should a corporation spend its earnings and deprive its stockholders of dividends to develop something that will upset its own market or junk all its present equipment? Will they make *pioneer* inventions that revolutionize an industry, render present plants and products obsolete ? Can corporations be expected to "hop off" into new horizons of industrial achievement ? As well expect an octopus to fly! I have looked up the records to see whether the inventors of a majority of the more or less radical departures (not even wholly pioneering inventions) were employed by a large corporation *to work to that end* when the invention was made. It appears from the table presented here that the large majority were made by outsiders or were made "independently" by an officer or director and were either sold to the company or taken elsewhere for development.

If this is the rule, it is vastly important for us to know it and to adapt our patent system to give the most perfect protection to the individual, because the nation and the race must rely chiefly on the individual for those great strides of progress, those quick adaptations, which prove its "fitness to survive." Then if the large corporations fail to function cooperatively in any particular instance, the outside seeds of progress will not necessarily be neglected or killed; a new corporation can be created to foster it and the old one left to take care of itself.

The German System Failed

In the one exceptional country where a considerable proportion of the valuable inventions were fostered by large corporations—Germany—the University workers were subsidized by industry, honored by official governmental recognition, respected and looked up to by the people and insured by law an interest in their inventions. Even with all this fostering care by a paternal monarch, and by one of the best patent systems in the world, the instances of basic inventions opening up new lines and founding entirely new industries are relatively rare within large corporations as the preceding list indicates. Why ? For the simple and obvious reason that, when development is directed by trained and experienced men responsible to stockholders for expenditures, they have little inducement to try to supercede that which they are paid to develop and improve, and they know too much to undertake the seemingly impossible.

From Noah's Ark down the ages to Marconi and the Wrights, it has generally been the so-called "crazy" fellow, who didn't know any better and was

*Pioneering involves leaving home, abandoning fields at present cultivated and risking means and perhaps life in entirely new country to be opened up and developed, preparing the way for others.

working on his own who revolutionized affairs and opened up new horizons of progress by creating new industries and rendering old industries more or less obsolete. He had his own vision, made his own sacrifices to his own gods, and there was no man to say him nay; so he kept on trying till it happened. Railroads were absurd, steamboats were unsafe, explosives dangerous to use, wireless was a scientific curiosity, heavier—than—air machines were demonstrably impossible; gasified motor fuel was a waste of volumetric efficiency, and many a Bergius process was either not theoretically practicable or not practically worth while, etc. etc. etc. Had the authorities of the time had their own way, we would have had no Judaism, no Christianity, no United States of America. Freedom of individual initiative and security of desired recognition and reward if successful, are what both common sense and history teach us to be the essentials to big strides of progress. Much knowledge, experience, conservatism, organization, supervision or authority are too often a handicap.

The National Balance Sheet

Finally, what does the treatment which we as a nation accord to inventors and inventions mean to the development of national character ? On the one hand, there is no possession a man loves so much and feels so truly his as the idea he created or has adopted and poured his interest and money into developing. It is his child. To no other interest will he devote such enthusiasm or make such sacrifices. Work of that kind is the most healthy and character-constructive activity of man. It makes for clear, straight, original thinking and self sacrifice to an ideal. So there is perhaps no kind of activity that we as a nation could better afford to cultivate widely by encouraging liberally. On the other hand what is the effect of our obstructive patent office attitude, our sharp business practice and our complex legal procedure which too often deprive a man of practically all protection for his intellectual property ? We may cheat him out of almost anything else and rob him of almost any other property, without nearly so much offending his sense of justice and undermining his respect for law and the Courts, as if we rob him of the fruits of his invention, his brain-child, which the Federal Government has promised to secure and thus has tempted him to disclose and to abandon to the public after 17 years. There is no surer, quicker way to make clever unscrupulous crooks.

Recently Silas P. Strawn, President of the American Bar Association wrote, "There can be no greater danger to any nation than the loss of confidence by its citizens in the integrity and justice of the Courts of the Land. The very basis of our Government is faith on the part of the majority of citizens that their rights, their lives, and their liberty are protected by that Government through just laws justly administered." What far-reaching poison to the body politic is a court decision that robs an inventor of his brain-child, robs a widow of the monument to her husband's achievement and of her own income, robs those who have given the best years of their lives to creating a new industry of the industry they have builded, and robs hundreds of the employment which has a special absorbing personal interest for them ? Worst of all, such a decision necessarily awards the benefits largely to the opponent who for years has sought to filch from the creators those same benefits which the Federal Government undertook to secure to the inventor and his assignee. Such a decision tends to push every last owner and employee of the new industry into the path of disrespect for law and justice. Such a decision goes far toward making would-be law breakers of our most progressive, upright and useful citizens. At the same time it vastly increases the means, power and temptation of predatory men to take what never belonged to them and they had no part in creating. Also, because they take it by due process of "law", it is difficult for the lawyer to call it theft and such a decision greatly increases a lawyers inducement and complaisance in defending those who take what they please.

Profitable Patent Thefts

Should a conscientious patent lawyer take a general retainer to defend all infringement suits for a client who makes it a practice never to buy patents or pay royalties because experience has proven it to be cheaper in the average to fight, to pay the best lawyers and to pay a few judgments now and then if and when he loses ? Should such an "experience" be possible in our country ? Are "law" and "equity" in the United States helping constructive honesty or predatory dishonesty ?

Error there must sometimes be, but which is best for the interests of society, that we err in favor of the creator or of the imitator ? In favor of him who has opened up a new path of progress to our feet, or of another who seeks to avoid the toll-gate which we, (the people of the United States), have agreed to maintain for the builder of the new road we enjoy ? Which promotes the fitness of the nation or the race to survive, careless suppression of initiative progress, or rigid suppression of crimes against our intellectual property ?

These questions are neither rhetorical nor academic. Until recently the Supreme Court finally resolved the doubt in important patent cases where there was real doubt, because two Circuit Courts had disagreed. How has it resolved that doubt ? During about ten years from December 1916 to May 1927, my search develops only 24 patents which it considered with respect to validity or infringement. Of these, one (1) was held so limited that infringement was easily avoided, eight were held so limited as not to have been infringed, 12 were held not valid at all, and three were held valid and infringed. In case of real doubt the patentee had three chances out of 24.

REED SMOOT

Discusses

TARIFF REVISION

The keenest tariff intellect in the U. S. Senate reveals its reactions to chemical and farm schedules in an interview with "Chemical Markets"

A SPECIAL session of Congress this Spring to deal with tariff revision and farm relief is expected by Senator Reed Smoot of Utah, chairman of the Senate Committee on Finance, which handles tariff legislation, and who has been for many years a Republican leader of the Senate. However, prospective tariff revision should not greatly concern chemical and related industries, in the opinion of Senator Smoot, who indicated that as few changes as practicable would likely be made, so as not to injure American industries.

"If legislation was promised, why wait until next fall?" asked Mr. Smoot.

It is admitted generally that legislation was promised in the Republican campaign. Herbert Hoover declared in favor of an extra session of Congress, if farm relief legislation were not enacted at the last session of the 70th Congress, which ends March 4, 1929. Since such enactment has not seemed likely, the question has been when the extra session should be held. Nobody has presumed to speak for the President-elect, but Speaker Nicholas Longworth and some others have suggested postponement of tariff legislation until the autumn of 1929.

However, the Ways and Means Committee of the House of Representatives, which originates tariff legislation, is proceeding with tariff hearings during January, and Senator Smoot, as chairman of the Tariff Committee at the other end of the Capitol, is preparing to go ahead on the theory that there will be early revision of the tariff. Seated in his office overlooking the Capitol grounds, the Senator discussed the situation.

"There should be an extra session of Congress in the spring, so as to get through with it," said Mr. Smoot. "Revision of the tariff on a few schedules or classes is needed. Such revision should take about three months. While the McCumber-Fordney tariff act was twenty-two months in the making, much less time should be required now. No radical change of policy is involved. Even the Democrats say they are for protection of American industries and American workmen."

Asked to specify what schedules of the tariff would likely be revised, Senator Smoot replied.

"The demand seems to be chiefly for increases in tariff rates on farm products and on some items in the cotton schedule. Dyes and coal tar chemicals are well enough protected," he continued. "Rates here are as high as the American industry ever wanted them to be. It is true that at one time the war embargo on imports of these articles was considered for possible extension, but that was not deemed necessary by Congress. No request for increases of the duties on dyes and coal-tar products has come to me.

"The American chemical industry has prospered under the existing tariff rates of duty and Congress will not, in my judgment, be disposed to make radical cuts in the rates. However, there may be a movement to reduce rates on a few commodities, some of which are on an export basis, from the American standpoint. Indigo, ammonium sulfate, urea and certain other chemicals are being exported in quantity from this country, since enactment of the present tariff law. Cost of production data for this and competing countries indicate the possibility of decreases of duty being considered.

"On the other hand, increases of duty are reported to me to be indicated by comparative cost data, with reference to such articles as potassium chlorate, glue, tartaric acid and argols, whiting, peroxide of hydrogen, sodium sulfate and pyroxylin products,

in which American industries have been meeting severe foreign competition.

"Generally, I would say, American chemical industries are pretty well cared for under the existing tariff, and I know of no movement to obtain serious changes of rates. I have heard of no changes suggested in rates of duty on drugs, medicines, toilet preparations, soap and the like."

Senator Smoot, as a younger man, was at one time engaged in the drug business, and during his long service in Congress he has paid considerable attention to matters appertaining especially to the drug and chemical industries. During the discussions on drug and chemical tariff legislation he has figured prominently.

Turning to farm products and schedules in which the farmers of America have a considerable interest, Senator Smoot said:

"I understand that some changes in duty on vegetable oils will be urged. American consumers some time ago appealed to the U. S. Tariff Commission for decreases in duty on some of these oils, whereas American producers have protested that duties are not high enough. Action has never been taken despite the flexible tariff provision of the law, although there have been extensive hearings and investigations. American farmers are reported to want increased tariff duties on oil seeds and on some vegetable oils, particularly those edible in character. The Tariff Commission has been investigating vegetable oil materials under the flexible tariff.

"On farm products, as a general thing, rates of duty will doubtless be increased," remarked Senator Smoot, concerning this very active phase of the subject of tariff revision. "It is reported that farmers would like to obtain increased duty on casein, to help out the market for skimmed milk. They are also understood to be interested in certain starches, particularly potato starch, for an increased duty, and tapioca, which is claimed to enter into competition with American corn starch."

Mr. Smoot had compiled, for the Republican textbook in the last campaign, tables showing comparative rates of duty on farm products under the present and former tariff acts. Among the articles listed, some of which bear relationship to chemical and similar lines, may be mentioned meat products, lard, dairy products, eggs, butter, orange, lemon and citron peel, peanuts, other nuts, castor beans, flaxseed, poppy seed, sunflower seed, soya beans, cottonseed, honey, hops, and others.

Despite Senator Smoot's view that the impending tariff revision should not greatly concern American chemical and related industries, there are indications aplenty that they are preparing for it. Some who have tried in vain to secure relief or benefits under the flexible tariff are seeking it in this revision. Chemical manufacturers and drug manufacturers have gathered information together for presentation to the tariff committees of Congress, beginning January 7, when the chemical schedule is thrown open for discussion before the Ways and Means Committee hearing. They feel that while the revision may be intended primarily for the benefit of the farmers or the cotton manufacturers, the whole subject of tariff legislation is being opened up, and that any changes that anybody in or out of the chemical and related industries wants may be submitted and tried out. Manufacturers generally will not object to raw materials being dutiable provided the finished products are proportionately and adequately protected.

Editor's Correspondence

Editor, CHEMICAL MARKETS:

Why not, a National Association of Chemical Distributors and Jobbers ?

The last ten to fifteen years have seen terrific changes in the chemical industry. It has broadened the field for the sale and distribution of chemicals, to such an extent that a new type of distributor has gradually arisen and come to the front in a very definite and substantial manner, assuming considerable economic importance and representing a great deal of invested capital. In the previous days this field had been occupied largely by the wholesale drug jobber. However, his place in the sun has more or less been eliminated from this particular field and it now appears to the writer that it is ample time and a crying need for an association such as prevails among the paint manufacturers and the wholesale drug jobbers, to discuss our mutual problems and to iron out their difficulties.

As it is to-day, a chemical distributor and jobber has little definite identity of his own, being affiliated with various other organizations in a more or less quiet and inconspicuous manner, such as the wholesale drug jobbers, the paint, oil and varnish manufacturers, the pharmaceutical association, and other associations of this character, while preserving no particular identity of his won. At the present time he has gotten into the mental frame of mind where he has been so long looked upon with suspicion that he is not entirely sure of himself. He believes the manufacturer of chemicals looks at him askance, the Drug Jobber has no particular affection for him and he is somewhat suspicious of his own particular fellow members in the same class of business.

It seems to the writer that this could largely be eliminated if we should form an association which would give us all a home and a definite identity that would make itself felt among the entire chemical fraternity.

The use of chemicals has broadened to such an extent that there is just as much definite need to-day for a wholesale chemical distributor as still exists for the wholesale druggist.

We can suggest a dozen ideas for a convention that would amply justify the forming of such an association and the holding of an annual convention, and we believe it would be a helpful, constructive method of elevating the entire field of chemical distribution, and also, to a certain extent, of protecting ourselves from the unscrupulous and ill-advised who might enter into this particular field.

In view of the above we suggest therefore, that an endeavor be made to form such an association, and to make my proposal definite I submit the following:

First—that an annual convention be arranged for at some proper city, early in March.

(*Continued on page 105*)

Tariff Revision

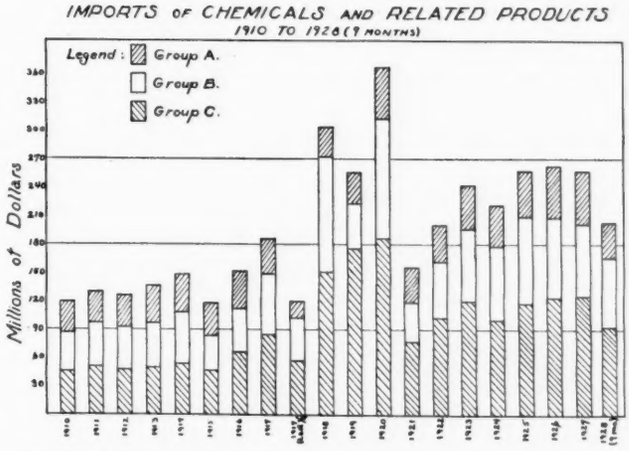
seen in the light of

Chemical Imports

REVISION of our chemical tariff schedules is a delicate business. It involves many nice adjustments of price to supply and of both these factors to the commercial and technical complexities of by-products and wastes, of competition between natural and synthetic commodities.

It concerns the success of an industry now the third largest producer of American economic wealth. It touches the prosperity of all American industry, and the immediate future promises to enhance vastly this industrial importance of chemicals. It is needless to emphasize again the key position chemicals occupy in public health and national defence, nor their contribution to the solution of our agricultural problems. "We hold these truths to be self evident;" but as Jefferson himself knew so well, it is wise to repeat familiar facts.

So fundamental, yet so far-reaching and at the same time so complicated is the chemical schedule that special caution must be exercised in the revision which Congress is now undertaking. Fortunately we have expert, disinterested authority invaluable in determining this serious business.



The chart above expresses graphically the figures of our chemical imports, as arranged by groups, in the table below. Note particularly the heavy importations after the close of the War and before the passage of the 1922 Tariff Law.

For six years now our chemical commerce has been conducted under the schedules of duty and an administrative provisions of the Fordney Act of 1922. For

TABLE I --- IMPORTS OF CHEMICALS, 1914, 1922, 1928

(Compiled from "Foreign Commerce and Navigation of the United States," Department of Commerce) (000 omitted)

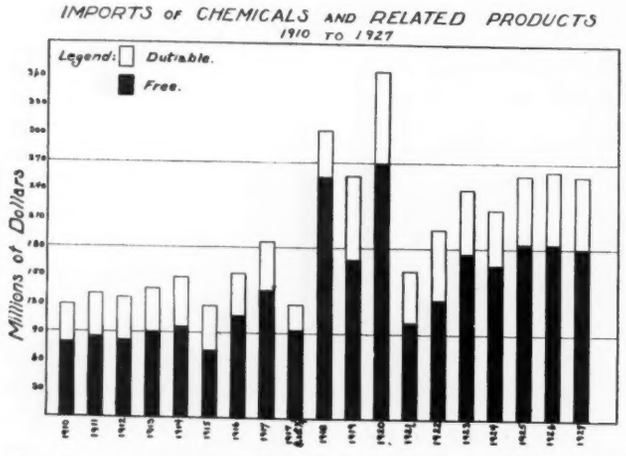
	1914 (fiscal)	1922	1923	1924	1925	1926	1927	1928 (9 mos.)
Total groups A, B, and C	$148,493	$204,836	$242,550	$221,409	$257,647	$262,382	$257,710	$204,833
Chemicals and allied products (total Groups A and B)		97,717	121,908	121,506	139,936	137,570	131,017	111,677
Free		60,450	86,617	89,375	98,573	91,889	86,081	
Dutiable	96,000	37,267	35,291	32,131	41,363	45,681	44,936	
Group A—Chemicals (total)	52,493	37,365	45,866	42,661	48,212	54,020	56,121	38,938
Coal-tar chemicals (total)	16,140	10,986	16,983	19,712	20,249	19,827	22,994	17,930
Crudes	4,609	4,706	11,594	14,368	12,026	13,069	16,344	11,745
Intermediates	1,233	403	552	770	1,148	751	926	952
Dyes and other finished products	10,298	5,877	4,837	4,574	7,075	6,007	5,724	5,236
Medicinals and pharmaceutical preparations	6,133	5,636	5,219	4,704	5,648	5,891	5,281	3,770
Acids and acid anhydrides	1,450	1,668	3,665	3,202	3,010	2,497	3,293	2,409
Ammonium compounds (except fertilizers)	676	1,720	1,760	738	1,095	1,060	1,028	682
Barium compounds	441	536	383	412	362	307	243	187
Calcium compounds (acetate and chloride)		1,821	49	138	157	251	311	
Potassium compounds (except fertilizers)	5,192	4,348	4,330	3,302	4,603	4,675	5,164	3,036
Sodium compounds (except fertilizers)	1,676	2,939	4,247	3,708	3,523	4,001	4,357	3,418
Other chemicals	8,519	7,711	9,230	6,745	9,565	14,562	13,450	7,506
Group B—Allied products (total)		60,352	76,042	78,845	91,724	83,550	74,896	72,739
Paints, pigments, varnishes (total)	2,394	3,652	3,317	2,841	3,208	3,822	3,760	2,738
Mineral pigments	547	1,314	1,331	1,088	1,210	1,534	1,633	1,130
Chemical pigments	1,163	1,705	1,512	1,302	1,432	1,466	1,416	1,129
Paints, stains, enamels	620	491	395	377	514	746	666	438
Varnishes	64	142	79	73	52	76	45	41
Fertilizer and fertilizer materials (total)	46,305	45,143	63,902	66,534	78,072	69,250	58,842	62,238
Nitrogenous	25,563	30,486	50,063	54,469	63,151	52,700	42,415	44,054
Phosphate	1,323	967	1,877	934	894	1,662	2,102	2,138
Potash	15,178	11,011	11,007	10,471	13,071	14,133	13,424	14,805
Other	4,241	2,679	955	660	956	755	901	1,241
Explosives, ammunition, pyrotechnics	847	992	872	1,006	1,142	1,119	1,032	895
Soaps	836	871	691	793	926	952	1,129	863
Perfumery, cosmetics, toilet preparations	2,665	8,973	5,523	5,870	6,277	5,420	6,936	3,975
Pyroxylin products (cellulose)	583	663	1,679	1,750	2,034	2,912	3,123	2,030
Blacking and polishes	49	58	58	51	65	75	74	Not given separately
Group C—Products other than chemicals and allied products (total)		107,119	120,642	99,903	117,711	124,812	126,693	93,156
Vegetable oils	30,332	58,708	63,613	59,261	74,229	78,483	78,101	56,573
Essential oils	3,017	5,413	5,638	5,462	6,356	6,504	6,485	5,002
Gums, resins, balsams (b)	8,492	22,755	33,744	21,305	21,308	23,798	23,154	16,304
Botanical drugs	6,904	7,937	8,721	7,879	7,639	8,170	8,852	7,864
Dyeing and tanning materials (crude)	2,584	7,673	3,929	2,963	3,760	3,819	4,959	3,733
Dyeing and tanning extracts	3,258	4,633	4,997	3,033	4,419	4,038	5,142	3,500

b Does not include rubber, turpentine products, camphor, or chicle

the previous eight years (the abnormal period of the World War) the Underwood Tariff was in force and during the four years before that time, the Tariff of 1909 obtained. The figures of our chemical imports, compiled by the Government, tell an unbiased story of our chemical trade. Just what does all this statistical array of pounds and gallons, of dollars and cents mean in the workaday world of making and selling chemicals.

First let us get a broad view of the general trend of our chemical commerce in relation to the tariff and review some of the general conditions obtaining in the chemical industry. Then we shall be better able to consider in detail some of the more important specific schedules.

Since 1922—the period of the Fordney Tariff Act—our chemical imports have increased approximately 25 per cent. in dollar value while our exports have grown by approximately a third. It is interesting to note that the import peak was reached in 1926 and that the slight recession of 1927, upon the basis of nine months figures in 1928, was continued last year. This is probably due, in the main, to increased rates under the flexible provisions of the Law. On the other hand our exports show a continuous increase.



Graphic representation of the ratio of free to duty paid imports of chemicals as set forth in the table across the bottom of this page and the next.

Fertilizer materials, vegetable oils, and coal-tar crudes continue to be the most important groups of chemicals brought into the country, and in view of the present keen interest in Washington in whatever will afford a measure of assistance or relief to farmers it is worth noting that two of these groups are of direct agricultural concern. The year just closed has seen a notable increase in fertilizer material imports, reflecting the improved position of our fertilizer industry and indicating too, the increased use on American farms of synthetic ammoniates of various sorts. Coal-tar chemicals, except medicinals, have also been brought in in increased quantities. In a general way, however, the position of the various groups have not as a whole changed greatly, although due to new products and new uses developed during the past few years there have been some very marked shifts in the values of individual chemicals imported. With these exceptions, which will be the storm centers at the tariff hearings, the balance of our chemical trade has been struck and the industries involved have adjusted themselves to the existing rates.

The ratio of free to duty-paid chemical imports is extremely interesting and significant. Nothing illustrates so tellingly as the charts, presented here for the first time, the effect of the rates of the various tariff acts, nor explains so clearly their effects upon chemical consumption in the country.

Under both the Fordney and Underwood acts approximately 70 per cent. of our chemical imports have been brought in free of all duty. But there is a marked variation in the relationships under the two Acts between the duties collected and the value of chemicals imported. Under the Fordney Act the duties paid represent 9.39 per cent. of the total value of chemical imports, while this was 5.17 per cent. under the previous Law. The per centage of duty to the value of dutiable chemicals, which may be taken as representing our average chemical schedule as accurately as is possible in so complicated a schedule with such variable rates, was 33.78 per cent. (Fordney) and 17.69 per cent. (Underwood).

TABLE II --- EXPORTS FOR

Year	1928 (9 mos.)	Average Act of 1922	1927	1926	1925	1924	1923	1922	Average Act of 1913
Value of free chemical imports		$169,519	$181,048	$185,293	$186,275	$163,174	$175,206	$126,122	
Value of dutiable chemical imports		70,786	76,658	77,014	71,371	58,236	67,343	74,079	
Total value	$204,833	240,295	257,706	262,307	257,646	221,410	242,549	200,204	
Relationships:									
Value of free to total value (%)		71.83	70.25	70.64	72.30	73.70	72.24		71.45
Value of dutiable to total value (%)		28.17	29.75	29.36	27.70	26.30	27.76		28.55
Total duty collected on chemicals		$22,956	$23,949	$24,977	$24,225	$21,126	$23,562	$19,896	
Relationships:									
Duty to total value (%)		9.39	9.29	9.52	9.40	9.54	9.21		5.17
Duty to value of dutiable (%)		33.78	31.24	32.43	33.94	36.28	34.99		17.69

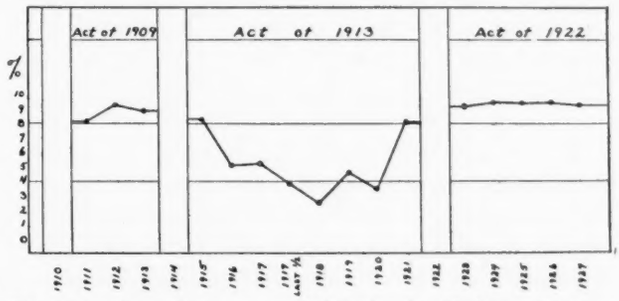
Source: Foreign Commerce and Navigation of the United States.
Notes: (000) omitted.
Fiscal years 1910 to 1917, incl.
Calendar years 1918 to 1928, incl.
1926 Commerce and Navigation base for classification of chemicals.
Act of 1916 and 1921 taken into account in so far as shown in Commerce and Navigation.

To summarize the general situation—despite a doubling of the Underwood chemical tariff rates in the Fordney schedules the percentage of our duty free imports has remained virtually constant, the increase in the dutiable importations keeping pace with the larger importations of duty free. The big increase of chemical imports in the period between the close of the war and the passage of the Fordney Acts (1918-1921) indicated plainly the need for the protection afforded by the present schedule, while the sustained ratio of dutiable importations, confirms the success of Congress in its purpose of equalizing competitive costs without undue hardship upon consumers.

No period of our economic development has seen a fraction of the chemical progress that the ten years just passed have witnessed, and when we come to a consideration of specific schedules we find that the commercial results of our astonishing scientific and technical advantages are the cause of certain admittedly mal-adjusted chemical tariff rates. Whole new industries have come into existence with new chemical demands. Scores of new chemical products are battling for their place in the chemical market places. Quick shifts in the competitive position of chemical raw materials and finished commodities of a chemical nature result. The present revision must have as its first purpose a better adjustment to new and changing conditions with just as little disturbance of the balance of chemical commerce as will be possible.

In the very first paragraph of the chemical schedule is a pretty example of the new problems created by our new conditions. The rayon industry's miraculous growth has created a new demand for acetic acid and since the passage of the present law a new direct recovery process in wood distillation operations has been put into operation and a new synthetic plant has come into production. Still consumption can hardly keep pace with consumption, and in view of the new technical developments the rate of third-fourth of a cent on acid of less than 65% strength, and 2c a pound on the more concentrated material will doubtless be scrutinized carefully. In this same paragraph, the duty on citric acid—avowedly protection for the infant industries in California—is questioned in view of the decline in imports from 1,624,892 lbs. in 1922 to 171,361 lbs. in 1927. Our tartaric acid makers, however, are feeling the strong competition of the syndicate of German and Italian manufacturers, and will undoubtedly attempt to take the five per cent. duty off their raw material, argols, which are not produced domestically in effective quantities.

RATIO OF DUTY COLLECTED TO TOTAL VALUE OF CHEMICALS IMPORTED



The fluctuations of the war period under the Underwood Act are show here in percentage of duty paid as a part of the total value of all chemical imported into the United States.

In Paragraph four—alcohols—interest centers on synthetic mentanol, which shares with the natural product a duty of 18c, raised in 1926 under the flexible provisions in order to protect the wood distillation industry from the onslaughts of German synthetic material, and on butyl alcohol, raw material for the manufacture of acetates which have been subjected to severe competition from German imports. The decrease in the imports of butanol from over a million and a half pounds in 1926 to negligible quantities this year, and the entrance of the American producer into the field of the acetates complicates this situation from the point of view of the best interests of the chemical industry as a whole. The actetate is now paying 25 per cent. ad valorem, and an effort will undoubtedly be made to have these products, together with the unclassified products now in the

CONSUMPTION OF CHEMICALS

1921	1920	1919	1918	1917 7/1-12/31	1917	1916	1915	1914	Average Act of 1909	1913	1912	1911	1910
$102,103	$269,574	$168,431	$255,451	$94,708	$135,272	$108,903	$71,922	$96,000		$91,282	$82,253	$85,692	$79,776
54,168	97,641	87,958	49,510	25,392	51,334	43,913	46,341	52,493		45,308	44,459	45,276	39,523
156,271	367,215	256,389	304,961	120,100	186,606	152,816	118,263	148,493		136,590	126,712	130,968	119,299
65.34	73.41	65.69	83.77	78.86	72.49	71.26	60.81		65.72	66.83	64.91	65.43	
34.66	26.59	34.31	16.23	21.14	27.51	28.74	39.19		34.28	33.17	35.09	34.57	
$12,661	$12,986	$11,822	$7,686	$4,564	$9,717	$7,809	$9,817	$11,593		$12,170	$11,681	$10,661	$10,519
8.10	3.54	4.61	2.52	3.80	5.21	5.11	8.30		8.76	8.91	9.22	8.14	
23.37	13.30	13.44	15.52	17.97	18.93	17.78	21.18		25.56	26.86	26.27	23.55	

basket clauses of Paragraph 5, put under a new heading of "synthetic chemicals" in Paragraph 27. This is the coal-tar section carrying 40% ad valorem on American valuation plus 7c a pound specific. Here would be included a great number of reagent chemicals together with those compounds of the alephatic series as well as those of the hydrocarbon groups now listed here. Greater protection for these newer products, which are so intimately connected with the later developments in the industry, is pretty generally admitted to be desirable.

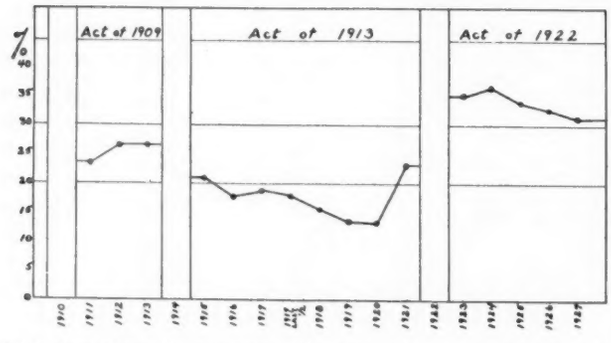
The revised barium schedule will probably be reviewed again, for a new factor has been introduced in the competition to which barium dioxide is facing in the electrolytic process for the manufacture of hydrogen peroxide and the lake color trade is not satisfied with the barium chloride situation. The dioxide imports have fallen from something over two million pounds in 1923 to less than twenty thousand, while the peak importations of the carbonate of nearly twenty million pounds in 1926 has been cut in half since the barium schedule was raised last year.

From 10,196 to 26,132 tons tells the growth in imports of whiting between 1922 and 1927, and the investigation which the Tariff Commission has been making in this material for the past eighteen months months is expected to furnish the basis for an increase in the present 25% duty. On the other hand the duty on urea (Paragraph 26) of 35% is apt to be removed in the interest of the fertilizer use of supplies now available.

The coal-tar dye rates of 45% ad valorem on American valuation plus 45c a pound specific, in Paragraph 28, are considered excessively high on low priced items and insufficiently protective for the higher priced colors. As a specific example the duty on indigo at 13c cents a pound figures out 51c while on indanthrene selling at $3.00 a pound it amounts to $1.80. Revision here is to be expected, and there are assuredly going to be some severe criticisms of the practical administrative features of American valuation as a basis for rate making, from certain Governmental agents.

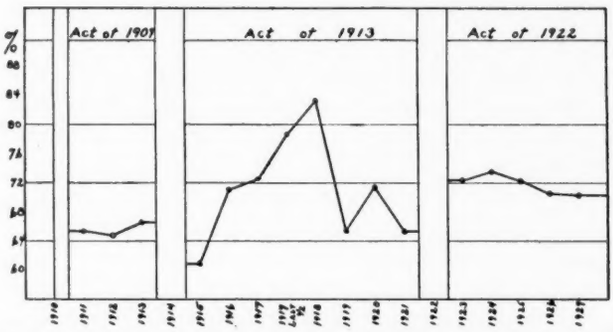
EQUIVALENT AD VALOREM — DUTIABLE CHEMICALS

Ratio of Duty Collected to Value of Dutiable Chemicals



This chart shows in percentage the duty paid as a part of the value of all dutiable chemicals imported, and represents broadly for the entire chemical group the average rate of duty paid.

PERCENTAGE OF FREE TO TOTAL OF CHEMICALS IMPORTED BY VALUE



Representing the percentage of our total imports entered duty free, again showing the extreme fluctuations of the war period and how in 1919-21 larger amounts of the low duty items were entered.

The developments of the plastic industries and the importation of over $2,000,000 worth of fabricated materials is going to force a reclassification of this group and the whole of Paragraph 38, another basket clause collecting esters and ethers, will undoubtedly be broken up and revised carefully. The astonishing increase of ester imports from 269 lbs. in 1921 to 2,717,789 in 1927 is a telling commentary on the rapid developments in this branch of the industry. The duty, provided the material does not contain more than 10% of alcohol, is at present 25% for all this class of material.

Friends of the farmer, and they are numerous and powerful, will undoubtedly move to afford him all the protection possible in the competition of fatty oils with butter and lard. Therefore the soap and paint industries may not fare so well, although there is an interesting twist in the inter-competition of the vegetable oils which will become a knotty problem if cottonseed oil is to be protected against olive oil or if any tangible encouragement is attempted for the flaxseed industry of the Northwest. Coconut oil from the Philipines, as we have seen, is one of the items that during the past few years has bulked very large among our importations.

The flourishing business of bringing in perfume concentrates and flavoring materials of various sorts is a serious concern alike of the domestic perfumery maker and the manufacturer of synthetic perfumery materials. Together with the various newer solvents and fertilizer materials these promise to be the points that will have to be most carefully considered in readjusting the schedules of the 1922 Law better to meet the present day conditions in our chemical commerce.

Danville (Ill.), Commercial News appears December 16 as the world's first newspaper on paper made from cornstalks. It followed the publication, December 15, of the first magazine on similar paper. It was the *Prairie Farmer*, published at Chicago, which printed its weekly edition on the new product.

The pulp from which this paper was made was manufactured in the pulp mill of the Cornstalk Products Co in Danville and converted into newsprint in the mills of the Kalamazoo Vegetable Parchment Paper Company, at Kalamazoo, Michigan.

Fly Sprays
Lacquers
Plastics
Leather
Rubber
Paper
Inks
Wax

INDUSTRIAL ODORS TO AID SALES

Fertilizer
Tobacco
Polishes
Textiles
Paints
Pastes
Soaps
Glue

By Eric C. Kunz
Treasurer and Executive Manager, Givaudan-Delawanna, Inc.

COLOR has its sales appeal—why not scent? The modern vogue has made colors of vivid, appealing hues a tangible factor in selling all sorts of goods from automobiles to kodaks, from bed linens to roofing materials. The American attitude towards perfumery has radically changed in the past fifteen years. Our consuming public has become scent educated. Why should not this most delicate, yet most suggestive of all the five senses be used more directly to sell other things than cosmetics?

As a matter of fact scores of manufacturers have been asking this very question and finding an answer in an emphatic "It should". Moreover, it can—often most effectively and usually at a trifling cost.

Nor is the idea nearly so revolutionary as it sounds. Old Mother Nature discovered it ages ago, and in the flowers, to pick a familiar example, she most effectively combines an appeal to the eye in color and beautiful form and to the nose in charming perfume. Our sense of taste is a pathetically simple thing when robbed of scent, for the tongue can only distinguish the broadest shades of sweet, bitter, and salty, unless assisted by the nose. How quickly and surely a cold in the head will rob all our food of its savor? And so it is not surprising to learn that the delicious aroma of all our finer tobacco in both cigars and cigarettes depends not a little upon aromatic flavors deliberately added. A single large manufacturer of a popular brand of cigarettes uses annually more than 12,000 pounds of coumarin; while one big snuff maker pays an annual bill of nearly a quarter of a million dollars for 20,000 ounces of pure Bulgarian oil of rose. Library pastes have long been perfumed with camphor and sassafras, and contrariwise, the odor of camphor in celluloid has for years been removed by killing it with more pleasant scents.

This deodorizing use of perfumes—which are no more or less than pleasant smells—to neutralize bad smells, is the oldest and still the most important mission of the industrial odors. Even the humble laundry soap, supposedly unscented, has for years contained say two pounds of aromatics to the five hundred pound batch of soap stock. But the taste changes and today it is not enough merely to disguise the unpleasant smell of rosin and fatty acids. The most popular brands are employing some eight pounds of perfume materials, sufficient to add a distinct and favorable smell.

The various fly sprays, whose rapid growth rivals the sensational developments of rayon and lacquer, are all more or less perfumed to obscure the violent kerosene smell, and it is estimated that while but a few years ago this use of aromatics totalled but 5,000 pounds, it will reach a million in 1929. Likewise, the use of paradichlorbenzine, one of the most popular household deodorants, must be close to 5,000,000 pounds each year, and this product is now also scented with some 2% of aromatic chemicals, selling at from $4 to $8 a pound.

A national economic result of this rapidly expanding industrial market for perfume materials has been a further development of chemical scents. Obviously, any product which is going to require a million pounds of perfume puts itself beyond the use of natural flower oils. For example, the scent used in the soaps made by any one of the larger companies is more than the whole wide world's output of the natural oils of bergamot and lavender. Without synthetics, which can be produced in umlinited quantities by purely chemical processes, our soaps would either have to be unscented or else these essential oils would be selling at famine prices.

This stimulating of aromatic chemical manufacture by the opening of this new industrial market has an interesting and suggestive secondary effect. Because of their strength of odor, their comparative cheapness, their wide variety, and their well-known and fixed odor values, the synthetic aromatics now

give the expert in pleasant odors a means of destroying or disguising almost any bad smell and also the material for creating almost any desired aroma. In France they have conquered the unpleasant smells of the bates used in tanning glove leathers. The typical rubber smell can be removed from rubber sponges, hot water bottles, bathing caps and, most important, from rubber coats and macintoshes. Metal and shoe polishes can be made free of their distinctive unpleasant odors. Library paste, printer's ink, and fish glue can be deodorized, even if desired—perfumed. The characteristic, disagreeable smells of benzol, kerosene, ammonia, the chlorides, phenol, carbon tetrachloride, butyl compounds, etc., have all been conquered. Nor is this work entirely negative, for our laboratories can actually remove the typical smell of artificial leather and impart to it the typical smell of Russian leather. Our attention has been called to the peat smoke odor that clings always to Scotch and Irish homespuns and I have no doubt but that we whall soon be able to reproduce it for any tweed material. In fact, textiles offer a fertile field for this work, since the finishing process often leaves a soapy-starch odor not at all pleasing.

Violet ammonia water is an old household favorite, but a deodorizing perfume spray, similar to that used in public buildings is now on the market—a five cent vial in a pint of water used sparingly in an atomizer will cure that clinging odor of stale tobacco smoke, and even overcome, so they say, a corned beef and cabbage dinner or a steak smothered in fried onions. Scented toilet paper is also on the market and we have recently worked out formulae for perfuming colored tissue paper sold as wrapping material to the finer shops. We have here blended color and perfume, using rose with pink, lilac or violet with lavender, and carnation with the blue shades.

Such scent appeals are more than a fad. Fifteen years back any woman who used perfume was—well, it simply was not done by nice women. As for going to bed in black pajamas between lavender sheets—! Then came a period when every smart woman had her own distinctive, personal perfume, and some of the popular varieties were sold in quart bottles. Now each has on her dressing table an array of selected perfumes that she may match her gowns or her moods with an appropriate odor. All this bespeaks a finer sense of odor values, a nicer appreciation, which opens new opportunities for sales appeals. Given equal quality and usefulness the pleasant smelling goods—be it a shoe polish or a piece of cloth—will be the first choice, an advantage many industries are seeking to add to their own wares.

Acetone was omitted from the list of those chemicals exempted from Key Industry Duty in Britain for the coming year. It has been exempted for the past two years but from the beginning of this year, acetone of all types will again be dutiable upon importation into Great Britain.

Who's Who In Chemical Industry

Bacharach, Lester S., secretary, treasurer and director, American Solvents & Chemical Corp., Born, Cincinnati, O., 31 May 1884; mar., Elice Wald, New York City, 8 Feb. 1917; children, 1 son; educat., Univ. Cinn., Law Schl., LL.B., 1905. Practiced law 1905-12; Jefferson Distilling & Denaturing Co., eastern rep. 1913-26; General Alcohol Export Corp., secy., 1915-18. Memb., Ind. Alcohol Mfrs. Assn., Inc. (treas.), N. Y. County Lawyers Association; Clubs: Chemists', Lakeville Golf & Country. Address: American Solvents & Chemical Corp., 285 Madison Ave., New York City.

Cabot, Godfrey L., president, Godfrey L. Cabot, Inc. Born, 26 Feb. 1861; mar., Maria B. Moors, Cohasset, Mass., June 1890; children 4 sons, 1 dau., educat., Boston Latin School; Mass. Inst. of Tech., Harvard, A. B., Zurich Polytech. Entered carbon black bus. 1882. Lt. U. S. N. R. F., 1917-19. In command of Naval Flying School, Marblehead, Mass. 1917; developing picking up burdens in flight, 1918-19. Republican candidate for Mayor of Cambridge, Mass., 1923. Memb: N. E. Watch & Ward Soc., (treas.) Hobby: aviation. Address: Godfrey L. Cabot, Inc., 940 South Bldg., Boston, Mass.

Easterwood, Henry Wyatt, chemical engineer, Victor Chemical Works. Born, Hearn, Texas, 2 January 1896; mar., Nettie Chauncey, Alexandria, Va., 28 September 1921; children, 1 son, 1 dau.; educat., Uni. Va., Ch. E., 1919. F. S. Royser Guano Co., chem.; E. I. du Pont de Nemours, chem.; U. S. Bur. Soils, Jr. chem., Victor Chem. Wks., chem. eng., 1923 to date. 2 mos. Eng. Officers Training Schl. Assistant author, "Phosphoric acid, Phosphates & Phosphatic Fertilizers" and several short articles on Phosphatic Fertilizers, co-author U. S. Bulletin No. 1179 "Investigations of the Manufacture of Phosphoric Acid by the Volatization Process." Memb., Amer. Chem. Soc., Mason. Alpha Chi Sigma, Raven Soc. Clubs: Victor, Temple. Address: Victor Chemical Works, 11th & Arnold Sts., Chicago, Heights, Ill.

Redman, L. V., vice-president and director of research, Bakelite Corp. Born, Oil Springs, Ont., 1 Sept. 1880; Mar., Blossom Corey, Toronto, Can., 23 Dec. 1909; children, 2; educat., Toronto, B. A., 1908, Post-Grad., Kansas 1910-13.. Redmanol Chem. Prods. Co., pres. 1914; Bakelite Corp., vice-pres. in charge of res., 1922 to date. Published papers and patents on phenol condensation prods. Memb., Amer. Chem. Soc. (chmn. N. Y. sect.), Alpha Chi. Sigma Xi. Hobby: gardening. Address: Bakelite Corp., Bloomfield, N. J.

Steinschneider, William, vice president & general manager, Zinsser & Co., Inc. Born, New York City, 30 May 1889; mar., Isabel A. Wack, N. Y. C., 19 Sept. 1916; children, 2 daus.; educat., Columbia Uni-, chem., 1910. Zinsser & Co., Inc. 1910 to date. Chmn. Hastings-on-Hudson Planning Comm. Memb., Amer. Chem. Soc.; Phi Lambda Upsilon (Columbia). Clubs: Chemists' (N. Y.), Hudson River Country Rotary of Hastings, Dobbs Ferry, and Ardsley (pres.). Hobbies: violin, sports, rowed bow oar on Columbia Crew 1910. Address: Zinsser & Co., Hastings-on-Hudson, N. Y.

Washburn, Frank Sherman, division sales manager, American Cyanamid Co., Born, Somers, N. Y., 13 September 1895; mar., Evelyn Nesbitt, Larchmont, N. Y., 30 April 1919; children, 1 dau., educat., Morristown School, Hill School, Cornell Univ. American Cyanid Co., sales dept., 1919-22; div. sales mgr., in charge of fertilizer matls., 1922 to date. Lt., jun. grade, U. S. Navy, 1917-18. Memb., Delta Phi, F. & A. M. (Lodge No. 1030), Larchmont Shore Club. Hobbies: horseback riding, motorboating, motoring, fishing. Address: 535 Fifth Avenue, New York City.

COAL TAR CRUDES

How Much Control Over our Domestic Markets are Exercised by British Exports?

DESPITE the constantly increasing domestic production of coal-tar products, Great Britain exported to this country in 1927 more creosote oil and other heavy coal tar oils than in either 1925 or 1926. Domestic manufacture of cresylic acid is apparently doing more to keep pace with consumption, for even with a lower tariff imports of this material from Great Britain in 1927 were less than those of the two previous years, in fact, almost half of those of 1925, but were still higher than those of 1923 and 1924. Nevertheless, the United States is still England's best customer for both creosote oil and for cresylic acid. In 1927, this country took almost ninety per cent. of Britain's exports of the former and about thirty per cent. of her exports of the latter.

In 1927, according to British statistics, England's total exports of that group described as creosote oil and other heavy coal-tar oils, amounted to 40,732,577 gallons, of which 35,570,820 gallons went to the United States. This compares with exports to this country in 1926 of about thirty-two million gallons, in 1925 thirty-four million gallons, in 1924 of forty million gallons, and in 1923 of forty-one million gallons. The figures of the United States Tariff Commission for 1927, place our imports of creosote oil from the United Kingdom at 38,279,105 gallons, and our total imports of creosote oil at 95,915,221 gallons. As compared with these import figures, domestic production of creosote oil in 1927 amounted to 76,395,325 gallons.

The conclusions are obvious. First, by taking almost ninety per cent. of England's exports, the United States practically regulates that country's export trade in those materials. Second, imports of creosote oil from the United Kingdom alone amount to about fifty per cent of the total production of this country. Third, total imports of creosote oil into this country exceed our production by about twenty-five per cent., thus the market in this country is in fact dominated by foreign supplies.

Although the United States has been England's chief market for cresylic acid during that same period, 1923 to 1927, the percentage of total exports coming to this country is nothing like so great, having varied between twenty-five and fifty per cent. of the total. According to British statistics, England's total exports of "carbolic acid" in 1927 amounted to 147,631 hundredweights, of which amount, the United States accounted for 41,948 hundredweights. The nomenclature "carbolic acid" probably includes both phenol and cresylic acid, and, in the case of exports to the United States, is probably wholly confined to cresylic acid. Imports of phenol into this country during 1927 were insignificant, amounting to only 500 pounds, according to the Dye Census. Hence, in terms of pounds, England, in 1927, exporting a total of 16,534,672 pounds of "carbolic acid" of which amount, the United States took 4,698,176 pounds. This compares with exports to this country in 1926 of about 6,500,000 pounds in 1925 of about 8,500,000 pounds, in 1924 about 3,700,000 pounds, and in 1923 of about 4,600,000 pounds.

Thus, in 1927, England supplied the United States with fifty per cent. of its imported cresylic acid, for total imports of that material, according to the Tariff Commission, amounted to 9,136,516 pounds, during that year. In furnishing the United States with that amount, England found a market here for almost thirty per cent. of her entire export trade in that material.

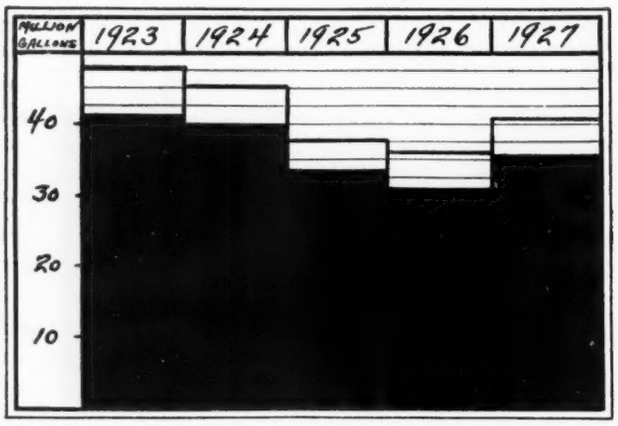
Other evidences of the importance of England's position in the coal tar field may be found in the following survey of that country's export figures, published recently in *The Chemical Trade Journal*, (London). It points out that so far as benzol is concerned, the export total for the current year looks like greatly exceeding that for many years past, since for the period January to October the amount of benzol and toluol exported was 3,689,681 gallons, after the 1,235,130 gallons of the corresponding period last of year. Toluol accounts for a very small percentage of this total, and it may be taken that by far the greater proportion of the increased export of benzol from England is finding its way to Germany, which has been such an important buyer of the material during recent years. After taking negligible amounts in 1925, and particularly in 1926, Belgium and Holland are also featuring now as important buyers of British benzol, and it is anticipated that when the details for 1928 are available it will be found that France has been increasing her takings to figures of the magnitude of the 1923 trade. The Empire is taking but small amounts of the benzol leaving England. As an indication of the course of values it may be stated that the 2,281,865 gallons of benzol exported in 1923 were worth £156,564, whilst the 1,970,383 gallons exported last year were valued at £109,099.

"Anthracene shipments, which declined considerably in 1927 look like maintaining their downward course for the present year. The export trade in British carbolic acid has fluctuated between 115,000 and 160,000 cwts per annum within the past few years. The figures for 1927 (147,631 cwts) show an appreciable increase on the 1926 total, and from the particulars so far available as to the present year, it is

probable that the quarter-million cwts mark will be passed before the end of December. America remains our principal market for carbolic acid, whilst Germany Holland, and Japan are also purchasers of considerable amounts. Values have declined considerably since 1923, as will be seen from the facts that the export total of 133,558, cwts of 1922 was worth £400,921, whilst the 147,631 cwts of carbolic acid shipped from this country last year were worth only £291,562.

"Exports of British naphtha have been at the steady level of about 60,000 gallons per year since the drop from the 313,393 gallons of 1923 and the 170,417 gallons of 1924. For the current year it looks as though the naphtha exports total will be in the neighborhood of 90,000 gallons. Naphthalene is another coal tar product the British export total for which seems like making a much desired recovery during the present year. In 1923 the amount of British-made naphthalene exported was 195,364 cwts. Since then it has steadily fallen, the total of the exports in 1927 being 11,305 cwts. For the first ten months of the present year alone the export total has risen to 41,641 cwts.

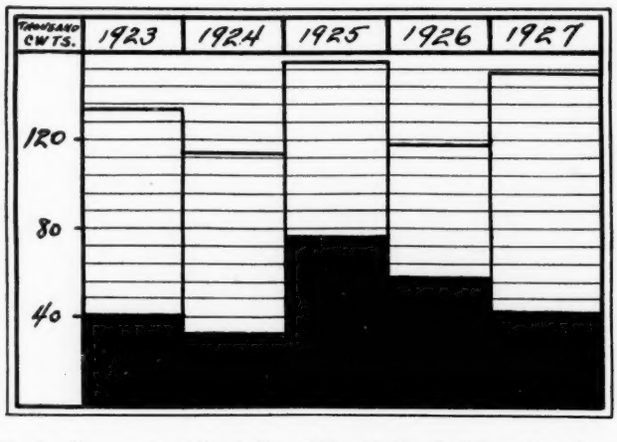
"The export trade in creosote oils and other heavy coal tar oils is, of course, regulated very largely by the demand from the United States, an aspect of the trade that we have discussed on one or two occasions fairly recently. Other purchasers, fluctuate very considerably in regard to their annual requirements. The present year will apparently see a slight



Britain's exports of creosote oil and other heavy coal tar oils with the shaded portion indicating the amount sent to this country.

increase in the exports of these heavy oils from this country. Reference was made above in connection with benzol, to the comparatively negligible part played by toluol in the benzol and toluol total given in the usual monthly returns of the Board of Trade. In 1927, it may be pointed out, only 283 gallons of toluol were exported from this country. For 1926 there were only 160 gallons, although in 1925 the export total for toluol was 27,848 gallons.

"The amount of untreated coal tar which leaves this country annually is not very large and is destined to a considerable extent to the Irish Free State. Thus, in 1927 out of a British export total for coal tar of 18,637 tons, 7,001 tons went to the Free State, and 8,263 tons to foreign countries. In 1926 the export total was 11,045 tons, of which 2,679 tons went to the Irish Free State, and 4,393 tons to foreign countries. The present year should see a fairly considerable increase in the total of this branch of the



England's exports of "carbolic acid" with the shaded portion showing the amount taken by the United States.

export trade, since 26,981 tons were shipped abroad for the period up to the end of October.

"As is only too well known to producers and dealers in pitch, the export trade has been falling off very considerably during recent years, mainly owing to the diminished takings of France. Thus, in 1926, out of a British export total of 333,192 tons, France was responsible for 180,701 tons, and Belgium for 89,178 tons. In 1927, France diminished her takings by half (to 90,974 tons), and the British export total fell to 264,650 tons, a decline that would have been more considerable but for increased takings on the part of Spain (19,957 tons in 1926, and 41,760 tons in 1927). Italy, it might be mentioned, is also taking much less British pitch, whilst the amount exported to British countries is a negligible fraction of the whole. So far as the present year is concerned the export total is apparently to be still lower than in 1927, for although France increased her takings from the 62,666 tons of January-October, 1927, to 86,219 tons for the first ten months of the present year, Belgium has declined during the same period from 62,949 tons to 43,097 tons. Unless an unforseen spurt in the export trade occurs during the closing two months of the year it would not appear that the amount of pitch exported from this country in 1928 will seriously exceed 200,000 tons."

German capitalists plan investment of $10,000,000 in projected development of coal chemistry industry in Australia. Production of hydrocarbon oils for use as motor fuel use will be chief objective, although manufacture of other by-products, through secret processes are also contemplated. A special action by the Commonwealth Government was necessary to cancel the law on "war precautions," which prevented foreigners from acquiring interests in mining and metallurgical enterprises, before the German capitalists could proceed with their plans.

A Model System of
Chemical Cost Accounting

By L. Staniforth

A knowledge of costs is the beginning of executive wisdom, yet the very processes and materials of chemical manufacture so complicate this problem that in despair many resort to a guess and a hope. Here is set forth a complete,

simple system perfected by the author in the plants of Brotherton & Company; a British working model quite adaptable to American requirements; a practical analysis of cost factors with helpful hints to determine their real values.

MOST chemical plants have grown to a size which renders personal supervision impossible. The only reliable way, therefore, by which an executive can judge of efficiency is through statistical reports. These reports can only be accurately obtained when a good cost system is in operation.

New methods are introduced and improved machinery installed every day, with a view to reducing costs either by eliminating waste or increasing efficiency. It is impossible to judge whether proposed improvements are likely to reduce costs unless the manufacturer knows not only what his total cost is, but also exactly what items make up the total. Items of cost are frequently lost when total only is considered, but if properly segregated, so as to show what they are, they can often be materially reduced and in some instances eliminated.

The term "costing" in chemical manufacturing goes much further, however, than the mere ascertainment of the "cost per unit." It implies the more important function of checking plant efficiency. If we arrive at maximum production efficiency in each stage of the process, the cost per unit will be automatically controlled.

It would not be possible to go into all the details, but I will endeavor to cover the practical principles under the following headings:

1. Raw Materials.
2. Labor.
3. Fuel and Power.
4. Plant Records.
5. Repairs and Engineers Stores.
6. Allocation of Overhead Charges.
7. Specimen Cost Statement.
8. Product Sheets.
9. Finished Products.

The chemist and engineer should welcome the cost accountant and work in harmony with him, as the figures produced should be as interesting and helpful to them as to the management.

Raw Materials

The charging of raw materials to the process must be dealt with on the constituent values, and not necessarily on the gross weight actually handled. Some materials contain moisture but should be debited to the plant on a dry basis. Other commodities have only a percentage of the actual chemical to be treated, these should be calculated on the actual weight of such chemical, as: (a) Crude carbolic acid should be determined as dry tar acids; (b) Ammonical liquor as absolute ammonia gas; (c) Brimstone and spent oxide for sulfuric acid as weight of actual sulphur. (d) Nitrate of soda as the N content.

It will be seen, therefore, that to follow the raw material through the process it must be expressed in the terms of its useful part.

In a large chemical works it is not considered good practice for the raw materials store to be under the sole care of the plant superintendent or process-man actually using the article. It has been found, by experience, that to show a high plant efficiency over a period, a larger quantity had been used than was actually booked to the process. This, of course, would be detected when the stock of the particular raw material became low, but very often this result comes to light too late.

Wherever practicable I consider it more economical to store raw materials in a compound or shed in the charge of a storekeeper, who is a help to the works office in ascertaining that the correct weight of material is received and that the laboratory has a

fair average sample in order that the commodity may be tested and the analysis compared with the actual purchase contract. In the case of raw materials in bulk, i.e. sulfur or salt the same procedure should be followed, as there is more likelihood of shortages in these larger quantities than materials bought in kegs, carboys etc. In the case of liquids in bulk, e.g. sulfuric acid, this procedure is not practicable; but if the storage tanks are properly calibrated the actual quantities may be ascertained as easily as a dry commodity is put over the weighing machine.

The actual quantities of raw materials passed on to the process should be recorded daily, or at such periods as found practicable. Where the process has been more or less standardized the storekeeper hands over to the plant-man similar quantities each day or period, as the case may be. All these records should be kept both as actual quantities and as weight of the absolute materials. The storekeeper is, therefore, responsible for the accuracies of the quantities on hand, and it is an advantage to be able to produce these book figures of stocks on demand. Of course, differences between the actual and book stocks do occur in the best regulated factories, but if proper records are kept it is much easier to trace discrepancies.

The foregoing refers to the quantitative values of materials, but the cost accountant should keep a stock account of each commodity stating the quantity and invoice value, crediting the various quantities charged to the process, as ascertained from the storekeeper's records. By these means, in addition to the book figures of quantities of raw materials on hand, it is possible to prepare, in a very short time, the actual stock values of materials in the works.

All carriages and handling charges should, of course, be debited to this stock account.

An actual example of a raw materials requisition is given below:

RAW MATERIALS USED

AZO COLORS No. B.....

Product..... Date.....

Batch No.	Description of Material	Wgt.	Lbs. or Gallons

Signed.....

Labor

Weekly wages analyses should be made in as much detail as possible and labor is divided into two classes —direct, or productive; and indirect, or non-productive.

The time card punch clock is the most convenient method of arriving at the correct wages analysis. Where men have stated jobs the whole week through, name and occupation are stated on the card, and when the card is priced for wages sheet purposes the direct amount chargeable to that unit of plant is shown on the card. Where Processmen or repairmen are changed from one process to another during the week, the time clerk should keep a time sheet for each man, and write this up daily, charging the particular plant or operation upon which the man has been working.

LABOR TIME CARD

.....Works Week ended Wednesday.....

No..... Name..... Occupation.....

Cost Acct. Number	Particulars of work done	Thurs.	Fri.	Sat.	Sun.	Mon.	Tues.	Wed.	Total No. of Hours	Rate	Amt. £ s d

The plant records and flow sheets will enable the indirect labor to be allocated in fair proportion over the various units.

A typical wages analysis for a Chemical Works is as follows:

WAGES ANALYSIS

Week ended.....

Plant or Department	Process	Repairs	Rec.& Des.	Other Lab.	Total
	£ $ d c	£ $ d c	£ $ d c	£ $ d c	£ $ d c
Steam Boilers.....					
Tar Stills.....					
Oil Stills.....					
Crude Tar Acids.....					
Pyridine.....					
Rect. Naphthas.....					
Crude Naphthalene....					
Anthracene.....					
Refined Tar.....					
Tarbit.....					
Pitch Loading.....					
Bulk Creosote.....					
Coopers.....					
Gen. Labour.....					
Administration.....					
Pensions and Allowances					
Insurance stamps.....					
Compensation.....					
Recoverable items.....					
Grand Total.....					

Fuel and Power

The allocation of the correct quantity of steam to each process presents a practical difficulty, but if the question be given sufficient thought a good approximate division may be reached. The first procedure is to ascertain the actual cost of producing steam at the

boilers, and the following particulars should be tabulated at least monthly:

1. Gallons of water evaporated.
2. Cost of feed water (if purchased).
3. Cost of materials for Water Softening Plant.
4. Tons of Fuel used.
5. Average price of Fuel delivered at Works.
6. Total cost of Fuel.
7. Steam Boilers labour.
8. Repairs material and labor.
9. Cost per 1,000 gallons of water evaporated:
(a) Water; (b) Water Softener; (c) Fuel; (d) Labor; (e) Repairs; (f) Total.
10. Water (lbs.) evaporated per lb. of coal used.

No. 10 is used by the engineer to check the efficiency of steam production. This figure, will, of course, vary with the quality of coal. The cost per 1,000 gallons is the most interesting figure for the works manager.

Where it is not possible to arrive at the amount of steam used, by the process of elimination, the works engineer should determine the quantity of steam used per hour in each of the processes, together with the quantity of through-put during that period. This may be ascertained: (1) by means of a portable steam meter or (2) by condensing the exhaust steam at the particular process and calculating back to gallons of water used per unit of production.

We have now the cost of producing steam per 1,000 gallons, and also the normal cost per unit of production at each stage.

To illustrate this procedure a specimen is necessary and for this purpose I have taken the distillation of tar from the crude product up to refined products. We will take, the cost of producing steam, shown by the account previously described, at 30/-per 1,000 gallons of water evaporated, which is equivalent to 0.036d per lb. of steam. The quantity of steam used at each stage has been ascertained, and the figure calculated to the cost per unit of normal production or consumption, as the case may be.

The monthly steam accounts at a Tar Works will be as follows:

Stages	Unit of Production with Allowance	Steam Allowance £	s	d
Receiving of Tar	2,369 tons @ 2d. per ton	19	14	10
Tar Stills	2,863 tons dist. @ 4d. per ton	47	14	4
Fire Oil Stills	68,963 gals. dist. @ 0.016d per g.	4	11	11
Vacuum Oil Stills	23,694 gals. dist. @ 0.123d per g.	12	2	10
Carbolic Extraction	24,926 gals. extr. @ 0.836d per g.	86	16	6
Pyridine Extraction	.236 gals. extr. @ p.213d per g.		4	2
Whizzed Naphthalene	74 tons made @ 1/- per t.	3	14	0
Naphthas Rectified	32,341 gals. made @ 0.275d per g.	37	1	2
Fitting Shop	Per month (arrived at by calculating of capacities of various machines)	15	0	0
Office & Laboratory Heating	Per month	5	0	0
	Total allowance for steam	231	19	9
	Actual cost of steam	274	3	6
	Excess cost	42	3	9
	Excess cost equivalent to:— 15.4%			

This method may be adopted for any plant having a number of processes. The cost per 1,000 gallons evaporated checks the efficiency of steam production, and the percentage excess cost (or saving) brings to light variations in steam consumption. Of course, the unit allowances vary with the cost of producing steam each period.

Much help is provided by the installation of mechanical recorders, for the following purposes:

(a) Measuring the amount of water by means of a meter.
(b) Steam pressure recorder.
(c) Dual record of the water temperature entering and leaving the economiser.
(d) Dual record of temperature gases entering and leaving the economiser.
(e) CO_2 recorder.

Where electric power is used it is much simpler as the meters record the units of power used over a period.

Plant Records

For an up-to-date check on the working of process it is necessary that actual plant records or flow sheets be kept. Each plant record, of course, is peculiar to its particular process, but the following are common to many operations:

(a) Identity of part of process, i. e. still number, V at number, etc.
(b) Quantity and description of raw materials charged, with the laboratory test if necessary, or if material has come from a previous process, record the place of origin.
(c) Time process commences.
(d) During the course of the operation records of the various chemical changes, additions of various process materials, temperatures, etc., should be made.
(e) Time process finishes.
(f) Quantity or measurement of material finished as far as that stage is concerned.
(g) Quantity and test of material sent forward to next operation.

If these records are kept they serve the following purposes:—

(a) To record the work done by each unit of plant.
(b) Any complaints respecting the quality of the finished article may possibly be traced by chemical changes recorded on the flow sheet, or the time taken for the particular operation.
(c) When the common charges, i. e. general, labor, overhead charges, etc., are being allocated, these plant records form the basis of the apportionment.
(d) Should any by-products be recovered in any particular part of the process, a record is kept on these flow sheets to enable credit to be allocated.

The chemical manufacturer to-day has not such a large profit margin to work upon, and the only way of making good showing at the year end is to work at a high rate efficiency. For this purpose each process should be treated as an individual unit, and the chemist given standard bogies to compare the actual output of each part of the plant.

The keeping of plant time records is absolutely necessary, as by these, the management is able to check that full use is being made of the plant available. Where a raw material goes through various processes it is often held up at an intermediate stage through shortage of plant. If each stage is timed and the various quantities recorded, a "bottleneck" may be re-

vealed, which, when corrected, may result in the same process being able to turn out a greatly increased output with the same labor, power, etc.

The keeping of plant time records has been greatly improved in recent years by the addition of automatic recorders. In certain works, during my experience, these automatic recorders have been the means by which the executives keep in close touch with the working of the most complicated process. They have also speeded up production and increased the efficiency.

A few specimen accounts showing actual results against "bogey" may be of interest. "Bogey" need not necessarily be the chemical theory. Sometimes it is not possible to arrive at a true theoretical quantity, and, in such a case, the best result obtained during the past year may be taken as "bogey." If the same "bogey" is used throughout, the comparison of results in the same process will show what progress is being made. The chemist need not worry his head about the cost at the plant, as if these efficiency records show that the maximum quantity of finished material is being obtained the cost will take care of itself.

BLACK COLOUR

Period 1927	Prod. Col. lbs.	INTERMEDIATE "A" 1 lb. Int. "A" = 1 lb. Col.			INTERMEDIATE "B" 1 lb. Int. "B" = 2.23 lb. Col.		
		Lbs. Used		%	Lbs. Used		%
		Total	Per lb. Col	Efficiency	Total	Per lb. Col	Efficiency
Oct.	1,296	1,737	1.34	74.6	700	0.54	82.3
Nov.	2,463	3,166	1.28	77.8	1,320	0.54	82.9
Dec.	1,986	3,188	1.60	62.3	1,309	0.66	67.4
Qtr.	5,745	8,091	1.41	71.0	3,329	0.58	76.7

SULPHURIC ACID

Year	Prod. tons 100% H_2SO_4	SULFUR			NITRATE (96% NaN_3)		
		Tons 100% used s	Equivalent 100% H_2SO_4	% Efficiency	Tons Nitre used	% on Prod.	% on Consumption
1927	7,536	2,697	8,254	91.3	116.05	1.54	4.30
Jan.	624	220	675	92.4	10.92	1.75	4.96
Feb.	716	258	790	90.6	11.46	1.60	4.44
Mar.	594	207	636	93.4	8.02	1.35	3.87
Qtr.	1,934	685	2,101	92.1	30.40	1.57	4.44

Repairs and Engineers Stores

The correct charging of engineers' stores is of great importance and an efficient control of this element of cost is essential. The advantages are:

(a) Correct cost is charged to the actual unit of plant receiving the material.

(b) The storekeeper can make periodical reports to the buying department on articles which have reached the minimum stock figures fixed by the management.

(c) Stocktaking is much simplified, as the stock of any class of material can be taken as opportunity occurs, without the paralysis of work which accompanies a general stocktaking.

(d) The working capital employed in carrying stores may be kept within reasonable limits.

All this should be kept under the charge of a reliable storekeeper. Bins or other receptacles should be provided for every group of material. Stock cards should be fastened upon each bin stating:

(a) Description of article.
(b) Maximum and mimimum stocks to be kept.
(c) Purchases with reference to invoice number or supplier if essential.
(d) Issues to the works stating the requisition number.
(e) Current stock ascertained by deduction.

When stores are required a requisition signed by the responsible Plant Foreman should be made out stating the quantity and description of the article required. The requisition is entered by the storekeeper on the stock card fastened on the bin, and afterwards passed on to the office for pricing and recording to the particular unit of plant concerned.

Greases, engine oils, waste, bar iron and lead, although not in bins may be treated in exactly the same way as small nuts and bolts.

Overhead Charges

In every business items of expense will occur in some months which are not properly chargeable against the cost for that month; for instance extensive repairs which are sufficient for the entire year. It would be manifestly unfair to include the entire repairs in the cost of any given month. Furthermore, every business has a dull season when its departments are not running full time, and this results in the actual costs for those months being abnormally high. It is necessary, therefore, that overhead costs be averaged over a period of time sufficiently long to take in both dull and busy seasons.

Overhead costs cover all the non-productive items which cannot be charged directly to any one department. These items should be distributed over the departmental expenses accounts on some basis which is fair to all. Great care should be taken to prevent charging to the general account any item that could be possibly charged to one of the departmental accounts, as, otherwise, either from carelessness or lack of knowledge the general account will become a dumping ground.

When the overhead charges for a period have been ascertained there are various methods in use for the allocation of this figure, and some of these methods are given below:

1. According to the process wages spent at each plant: in cases where expensive plant is in operation and the labor is relatively small this method is unsound.
2. On the floor space occupied: not always suitable as the value of the plant on the site is not taken into account.
3. On the ton for ton production.
4. On the value of the products made.

Where a factory produces two main products such as sulphuric acid and ammonia, it is comparatively a simple method to divide overheads in a fair proportion. If we take the case of an aniline dye factory where, say, 80 colours are made, none bearing any close relation to any other so far as the materials are concerned, the splitting up of overheads to each colour

is a more complex problem. The actual system of the splitting up of overhead expenses in a factory, where various colors are made at different times, and the different colors have a varying yield per batch, is to record the following particulars:

1. The number of batches of dye made for the period in question.
2. Calculating on the times recorded on the flow sheets these batches must be converted to a standard basis of 12 hours occupation of plant per batch.
3. The actual yield of colour per batch taking 12 hours.

Or as an actual example:

Total overhead charges for period	£3,852
Number of 12 hour batches color made	107
Cost per 12 hour batch	£36 or 8,640d
A color yielding 2,349 lbs. per batch would have an overhead charge per lb. of colour of	3.68d
A batch of 896 lbs. made in a similar time and in the same plant would have an overhead charge per lb. of	9.64d

This idea may be worked out successfully in any works making a variety of products, if the plant records are accurately kept.

Product Sheets

If we take crude tar as an example, there is no chemical theory as to the yield of this raw material. As there are generally large fluctuating quantities unfinished at the intermediate stages, the actual yield from the original raw material for any period is obscured unless we have some means of departmentalising the results. It is well worth while to produce departmental accounts, and the following information is necessary to form the basis of this product sheet:

1. Average analysis test of crude tar distilled over a period.
2. Quantities transferred from one department to another, from the plant records.
3. Average analysis of these transfers in terms of finished products.

A debit and credit account is made out for each stage of the process charging the quantities distilled together with the constituent values of each oil and crediting the actual production, showing also the contents as well as the actual bulk.

By this means it is possible to arrive at the following facts:

1. Quantities of oils passing through each department.
2. Actual loss (evaporation or leakage) at each stage and the loss through bad fractionation may be traced.
3. Summary of the stages will show the total yield of finished products from the crude and raw material, having made due allowances for the fluctuation of the stocks of intermediate oils.

This total yield may be compared in content with the actual analysis of the original raw material. The quantities recorded in these stages form the basis of the departmental cost accounts.

Sales Tabulations

Firms delivering a variety of products to practically every country, county and district, need some mechanical means of tabulation to provide the management with first hand information as to the markets. Such particulars may be tabulated as:

Date of delivery.
Source of supply.
Nature of product.
Quantity.
Quality.
Value.
Destination, i. e. customer, state and town.
Salesman.
Amount of discount.
Amount of delivery expenses and cost of packages.

When this information has been recorded the sales manager is able to call for up-to-date tabulations in a variety of forms to enable him to keep track of sales conditions. Tabulations automatically printed include the following:

1. Deliveries under the headings of the various products in comparative periods.
2. Comparative record of the business by each salesman in each district in quantity or in value, or both.
3. Tabulation of deliveries in the district or towns in values or quantities as compared with previous periods.
4. Actual delivery expenses against each invoice make it possible automatically to tabulate the quantity and naked value realized for each product, having eliminated delivery expenses and cost of packages.

Cost Conclusions

Before concluding I would like to mention one or two sidelines on chemical cost finding. Mechanical machines are of the greatest assistance in the preparation of statistics. Mechanical calculating and adding machines enable extremely intricate calculations to be done in as many seconds as it would take minutes by the old methods. Graphs and charts recording fluctuations in statistics whether costs, productions or efficiencies, are the most simple and effective means of presenting results. A cost system does not necessarily demand a heavy operation expense. If it is gradually built up to suit the particular business, the expenditure will be justified by the results.

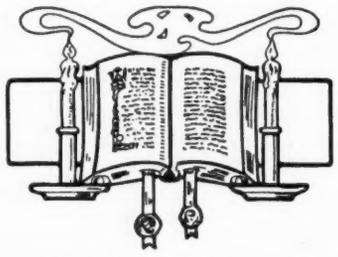
According to Japanese foreign trade statistics for 1926, Germany accounted for 300,000 tons, or 60 per cent. of Japanese imports of ammonium sulfate, the United States taking second place with 20 per cent. of the total, and Great Britain third, with 13 per cent. In 1927 the relation changed in favor of Great Britain, the German imports having declined to 81,673 tons, according to German statistics. Japanese production of ammonium sulfate is developing steadily. In 1927 it amounted to 180,000 tons which was 34,000 tons more than during the preceding year. The total consumption is estimated at 500,000 tons.

The future of the Japanese market for ammonium sulfate is influenced by the reection of large plants of the Japan Nitrogen Co. in Chosen equipped for an annual production of 250,000 tons. These plants will work the Casale process, similar to other Japanese plants. All the new plants operating at capacity would take care of Japanese consumption, according to Consul R. W. Heingartner, Frankfort on the Main.

Sulfur dusting experiments to prevent rust in the grain fields of Western Canada proved successful last summer, according to a report issued by the Department of Agriculture.

The Chemical Chronology

1928



JANUARY

Vanadium Corp. enters the field of chemical manufacture. ¶ Battelle Memorial Institute endowed to encourage industrial research at Columbus. ¶ Dr. Irving Langmuir adds the Perkin Medal to the Nichols, the Hughes, the Rumford and the Faraday medals in his honors collection. ¶ Union Chimique Belge combines five of Belgium's chemical companies with 30,000,000 francs capital, as the cartel fervor continues to intrigue Europe. ¶ Charles L. Read leaves Seaboard Chemical Co. to engage as a seller of solvents. ¶ Federal Phosphorous Co. sell its electro-thermal acid process rights in Europe to Soc. des Phosphates Tuniesens, Paris. ¶ Capital increases: I. C. S. to $22,000,000 sounds; Kuhlman's to 300,000,000 francs. ¶ Monsanto reorganizes capital structure and puts stock on market at 34, listed on Chicago Exchange. ¶ Du Pont reports net income for 1927 of $41,113,968, an increase of 10.5 per cent. over the $37,199,164 reported for the previous year.

FEBRUARY

Edward Mallinckrodt dies February 1, aged 83. ¶ Three hundred chemical executives attend a Hooverless Hoover conference in Washington. ¶ Wood Distillers Corp. organized as sales agent for various wood chemical producers. ¶ H. S. Farleigh takes charge of Merchants' Chemical Co., Chicago. ¶ Union Carbide announces $7,000,000 addition to South Charleston plant. ¶ O. S. Doolittle leaves Semet-Solvay to join Dr. Jungman in American Fluoride Co. ¶ Cartel rumors and denials continue to fill much space in the public and chemical press here and abroad.

MARCH

Westvaco Chlorine Products Corp. and Warner Chemical Co. merge. ¶ William G. Gundelfinger, vice-president, Diamond Alkali Co., dies March 18, aged 48. ¶ Ansco-Agfa, Inc., is formed, giving the I. G. a strong foothold in the photographic chemical industry. ¶ Barium carbonate duty is advanced ½c pound to 1½c pound. ¶ American Agricultural Chemical Co. sells private railroad to retire $6,000,000 of its bonds. ¶ Celanese buys Celluloid Co. and moves plant to Cumberland, Md. ¶ Air Reduction Co. splits stock three for one. ¶ Du Pont Rayon Co. acquires United States rights to acetate rayon.

APRIL

American Commercial Alcohol Corp. is formed by merger of American Distilling Co., David Berg Industrial Alcohol Co., and S. M. Mayer Alcohol Co. Philip Publicker, chairman, and R. H. Grimm, president. ¶ Sir Alfred Mond, nabob of British chemicals with Chase Securities Corp. forms the Finance Company of Great Britain and America, a sort of international holding corporation extraordinary. ¶ "Lutzow" cruises the Mediterranean with the Second International Nitrogen Conference aboard. ¶ A. C. S. raises $360,000 for "Chemical Abstracts". ¶ Weiss' D-P-G patents (held by Dovan Chemical Co.) invalided by U. S. Supreme Court. ¶ Morris Herrmann & Co. absorbed by United Color & Pigment Co. ¶ Davison Chemical Co., backed by Hayden Stone, buy Southern Phosphate control for $1,526,000. ¶ Professor Theodore W. Richards of Harvard, winner of the 1914 Nobel Prize in Chemistry for determining atomic weights of thirty elements, dies April 2.

MAY

Deaths: Dr. Edgar Fahs Smith, University of Pennsylvania, May 3, aged 72; Horace G. Carrell, Solvay Sales Corp., May 17, aged 55; William H. Nichols, Jr., General Chemical Co. May 26, aged 54. ¶ Henry Howard, eminent yachtsman, re-elected president of the Manufacturing Chemists' Association. ¶ Dow declares 10% stock dividend and raises quarterly rate from $1.25 to $1.50. ¶ Edgar M. Queeny succeeds his father as president of Monsanto and John W. Boyer leaves Mathieson to become vice-president in charge of sales. ¶ J. T. Baker acquires Dissosway Chemical Co., Brooklyn.

JUNE

E. E. Routh, Southern sales manager, Mathieson Alkali Works, is appointed sales manager of the company, succeeding John W. Boyer. ¶ Paper Makers Chemical Corp. capitalized at $8,000,000 is formed at Easton, Pa., by consolidation of interests of eight companies in the field. ¶ Borax price lowered to $50 a ton. ¶ Grasselli sells 100,000 shares no par stock at 47 through National City Co. ¶ Edward G. Nellis, (Chemical Catalog), dies June 26, age 47. ¶ Imperial Chemical Industries increases capital to £7,000,000.

JULY

Institute of Chemistry, holds second annual session at Northwestern University, Evanston, Ill. ¶ Philip G. Mumford retires as president, Commercial Solvents Corp., after serving six years. ¶ E. F. Brundage, formerly assistant sales manager, is appointed sales manager, Solvay Sales Corp., succeeding the late Horace G. Carrell. ¶ Hooker Electrochemical Co. begins construction of $1,000,000 plant at Tacoma, Wash. ¶ Cornstalk Products Co. produces commercial of paper made from its namesake raw material. ¶ Italian producers and Spanish Government agree on mercury sales syndicate. ¶ Methanol and acetate prices begin their advance. ¶ Hard times and low prices encourage formation of Naval Stores Marketing Corp., sales merger of sixty Southern operators.

AUGUST

American Linseed Co. sells linseed properties, half each to Spencer Kellogg and Archer Daniels-Midland. ¶ Sodium silico fluoride duty is increased to twenty-five per cent. ad valorem. ¶ Aldyco Corp. organized as a holding company with $3,000,000 capital, by the Allied Chemical & Dye Corp. for its extensive security holdings outside the chemical field. ¶ Cook, Swan & Young thrown in receivership by minority stockholders, charging mismanagement. ¶ Tariff Commission probes decolorizing carbon costs. ¶ Arthur Sommers buys out Fred L. Lavenburg Co. from heirs of his late partner. ¶ Selden & Co. begin building to double their plant capacity. ¶ Union Carbide & Carbon acquires Acheson Graphite Corp.

SEPTEMBER

Lord Melchett, nee Alfred Mond, visits America to complete International Nickel merger, leaving chemicals severely alone. ¶ Nitrogen discussed at first economic symposium at A. C. S. meeting—Williams Haynes, chairman; speakers, Jasper Crane, E. M. Allen, Charles J. Ramsburg, H. R. Bates and Walter S. Landis. ¶ Nitrate Agencies Co. begins rebuilding Wilmington, N. C. plant destroyed by fire. ¶ American Potash & Chemical Co. declares initial quarterly dividend of 25c. ¶ Ralph E. Dorland (Dow) elected president of Salesmen's Association. ¶ Sodium silicofluoride duty is advanced to 25 per cent. ad valorem.

OCTOBER

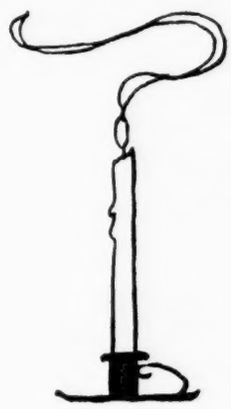
Niacet Chemical Co. begins first production of synthetic acetic acid in United States. ¶ Deaths: James W. Elms, paint, lacquer and chemicals department, du Pont, Oct. 18, aged 43; P. Samuel Rigney, secretary, Roessler & Hasslacher, Oct. 23, aged 56; W. A. Stopford, Parsons & Petit, Oct. 30, aged 60; A. E. Nye, Marble-Nye, Oct. 4. ¶ Leonard T. Beale becomes president, Pennsylvania Salt Mfg. Co., succeeding Miers Busch. ¶ Fluorspar duty advanced from $5.60 to $8.40 a ton. ¶ Dr. Herty leaves the Chemical Foundation to enter private consulting practice. ¶ Davison Chemical acquires control of Read Phosphate, Welch Chemical and Porter Fertilizer Works.

NOVEMBER

William Hamlin Childs formerly president, The Barrett Co. and vice-president and director of Allied Chemical & Dye Corp., dies November 2, aged 71. ¶ Scientists, economists, and executives gather at the Second International Conference on Bituminous Coal at Carnegie Institute, Pittsburgh. ¶ Monsanto Chemical Works secures complete control of Graesser-Monsanto Works, Ltd., England, thus becoming the only American company with a plant in Europe for the manufacture of fine chemicals. ¶ First shipment of anhydrous ammonia leaves the new plant of the Allied Chemical & Dye Corp at Hopewell, Va. ¶ Duty of 4c on potassium permanganate raised to 6c. ¶ Deaths: Howard W. Sherrill, president, Welsh Holme & Clark Co., Nov. 5, aged 40; L. R. Schwerin, president, Casein Co., Nov. 14, aged 59 years. ¶ Du Pont—Grasselli merger—powder to former and chemicals to be concentrated under Grasselli name and management at four for one stock exchange. ¶ Dow stock passes 200; du Pont, 490; Mathieson, 170; Union Carbide, 200; Monsanto, 90; in the Hoover bull market. ¶ Newport Co. engages in $6,500,000 public and $1,300,000 private financing to acquire Acme products and readjust capital structure.

DECEMBER

First shipment of nitrates from the air to be manufactured in the United States, leaves the Hopwell plant of the Allied Chemical & Dye Corp. ¶ Harshaw Fuller & Goodwin take over heavy Chemical division of Rhodia Chemical Co. ¶ Chemical Division, Dept. of Commerce announces it will begin solving domestic chemical problems, Jan. 1, 1930. ¶ Dr. J. K. Haywood, insecticide and disinfectant authority, dies Dec. 1. ¶ Westvaco offering of 80,000 shares common stock at $31.50 oversubscribed and opening quotation on N. Y., Curb is 32. ¶ Between heavy discussions of proposed tariff revision, the Synthetic Organic Manufacturers reelect August Merz as president.



POLITICS *vs.* CHEMISTRY

By Charles H. MacDowell
President, Armour Fertilizer Works

"Like Banquo's ghost—so E. M. Allen has cleverly summed up the chilling effect upon our chemical development of the threat of our government's entrance into nitrogen manufacture.

And like the grisly spectre at Macbeth's banquet this chemical bugaboo will not be driven off. Muscle Shoals will not down. It will purely bob up again serenely at the forthcoming Congress.

SENATOR NORRIS feels and states that, notwithstanding the pocket veto, the measure that was passed by the Congress last Spring is a law; and there is now before the Supreme Court a case that covers this point fully—whether a pocket veto can be effective during an interim in the session of Congress.

The whole chemical industry, since the World War, has had much apprehension about Muscle Shoals, more perhaps than the original intent of the National Defense Act might justify except that the manufacture of nitrates is a new, a growing, and an important activity of the industry. But we appreciate instinctively that the construction of that plant marked the entrance of the government into business—in fact into chemical business. And that is an egg that might well be candled. There may be a difference in the ripeness of eggs, but all may be subject to question and examination. It may also be that action on this particular egg has been delayed so long that we shall have a Chinese reaction—the egg will become edible through delay.

Unfortunately for the industry and for the people of the country, Muscle Shoals has become a political subject rather than economic; and there is a clash between two systems of economics and the proponents of each have had their say. Politics often represents a state of mind and not a state of facts. It is, at times, a good deal like the chemical industry.

The facts in connection with Muscle Shoals have been fully presented at many hearings before many Congressional committees, yet in our scrimmage last spring we were frequently confronted with the statement that they did not know much about it, and that the fertilizer industry had not itself presented its position in connection with the proposed legislation.

If we go back to 1916, to the birth of this problem, we find that we were then confronted with a shortage of nitrates and with the possibility that we should become involved in the war. As a part of the National Defense Act, the President was authorized to study the question of nitrate production. An appropriation of $20,000,000 was made for that purpose. There were "dedications" in connection with the bill which perhaps reflected the attitude of that particular Congress toward government ownership and government operation.

Some people have been known to change their minds and change their policies, and if I read correctly the results of the recent election and Mr. Hoover's very decided stand in respect to the danger of government operation, I would say that we have had a referedum on the momentous question of the government's doing things that private business has heretofore done in this country with profit to the people and to the great profit of the government in taxes collected.

We, who are of the fertilizer branch of the chemical tree have been frequently charged with being destructive and not constructive, and we have therefore made a study to determine the position that this fertilizer industry may properly take, and to learn if we cannot make some constructive suggestions. As a matter of fact, such suggestions have been made before, but like nearly everything else connected with Muscle Shoals, they were lost in the shuffle. The industry has felt from the beginning that it was confronted by a peculiar condition.

The government owns a manufacturing plant capable of producing nitrates. The industry realized that the Wilson Dam was built after the War, except a very minor part of it, and this fact must be taken into consideration in any solution of the prob-

lem. Moreover, the property cost more than its replacement value and in its use or disposition the government and the people must sustain a loss. It seems difficult for our legislators at Washington to admit such a loss openly. They want to hide it in some way. The industry felt that if the plant at Muscle Shoals should be put to use in making fertilizer, it should be put to that use only on a sound, honest, complete cost-accounting system. The fertilizer industry has watched government manufacture and government accounting in many kinds of work and has not always been impressed with the procedures followed.

Government cost accounting all too often takes money from the people, puts it to work, and then forgets to figure in the cost of that capital. They do not insure. They make no charge for occupancy of the land. They forget depreciation. When you examine their method of figuring costs you find that they are practically out-of-pocket.

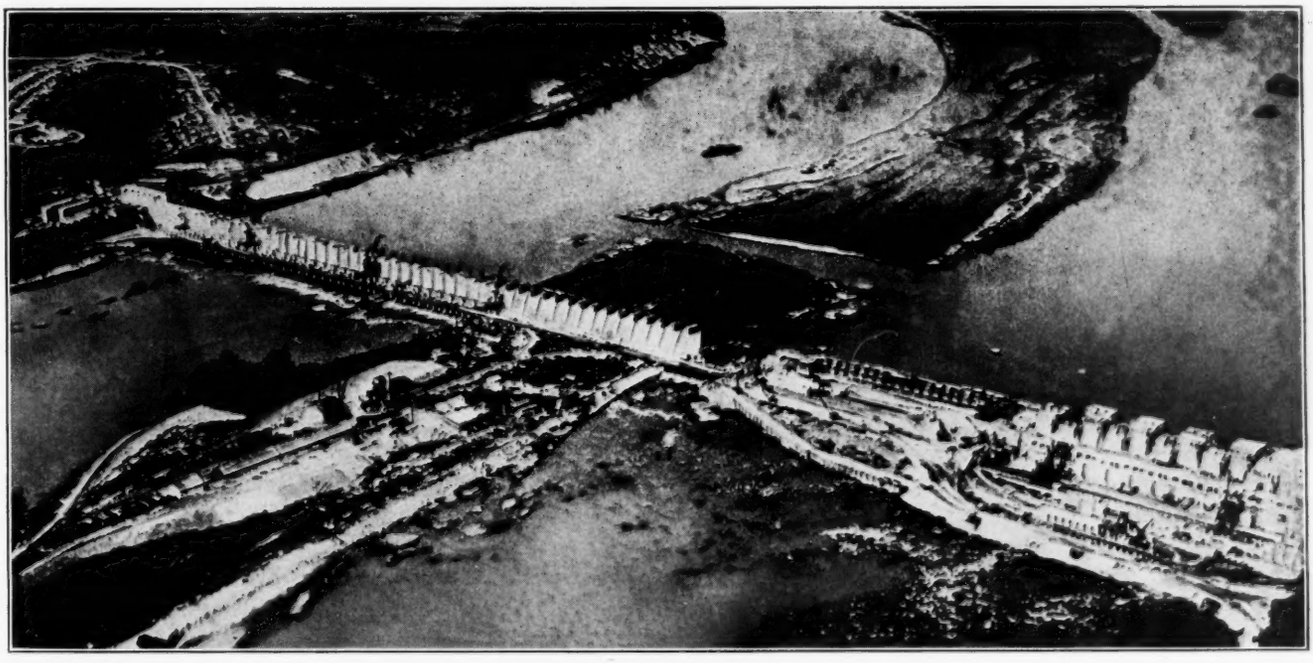
Government sales of chemical fertilizer based on that method of accounting would be manifestly unfair competition with both the chemical and fertilizer industries, and I feel quite sure that if we could take the Federal Trade Commission back of the barn and talk this matter over, it would approve the position we have always taken—that if Muscle Shoals is to be put to work charges for its product should allow the people whose money is invested to get some return from the investment. This idea of making chemical fertilizer, and giving a lot of it away without making a proper charge for it on the books, has been and is repugnant to any chemical business man. As far as I know the Congress has no idea whatever what Muscle Shoals is worth, or what the Wilson Dam is worth.

Figuring on the output of the generators installed there, the cost would be about $225 per horsepower. Figuring on the primary power, it would be perhaps three or four times that. What is the cyanamid plant worth? It is a twelve-year-old plant. The furnaces are decidedly under size compared with those used in modern cyanamid manufacture. The power utilization is small compared with that by which the modern unit can produce cyanamid, and large parts of the apparatus, we can safely say, are somewhat obsolete. This fixation process itself, which we know something about, is very effective where water power cannot be used profitably for manufacturing products of higher value. But is this the situation at Muscle Shoals.

But the Muscle Shoals plant is there! It represents a vast investment of public funds—your money and my money—and it is depreciating at an alarming rate. Something must be done. It must be operated or disposed of.

The fertilizer industry has made what we honestly believe is a sound proposal based on practical chemical economics. It is such a solution as, I believe, merits the support of the entire chemical industry; and we all know that a business-like solution of this ghostly problem is a matter of very real concern to all chemical industry. Therefore, I bespeak, through CHEMICAL MARKETS, the unselfish, yet selfish interest of the entire chemical industry in furthering this proposal. This objective may later require very prompt, vigorous action.

The supreme test is now being accorded the economic symposium on nitrogen, which took place at the American Chemical Society's meeting in September. Its entire proceedings have been reprinted in full in the Congressional Record thanks to Senator Thomas F. Bayard of Delaware, who presented it to the Senate, December 10.



From COAL *t*

In the battle of land and laboratory one of the big prizes uncaptured yet is synthetic rubber or an acceptable substitute for some of the many uses of this important natural raw material. For thirty years now, this bafflingly complex substance has been attacked from all angles by chemists in England, France, Russia, Germany and this country. During the War the Germans did produce a makeshift substitute, but it lacked many needed qualities and it was produced at a wholly impractical cost. Since then, from time to time, stories of a successful rubber synthesis blaze forth in the press.

COAL is today the basis of major organic chemical industries. Yet we are not so far removed from those years when coal brought with it, as an unpleasant accessory, troublesome chemical by-products. How recently benzol seemed at best only a means of cleaning and naphthalene was a moth ball? And yet that moment when these substances were freed from the shattered structure of coal marked the birth of a new power fuel; and this other coal by-product acquired a commercial interest when from it was developed the new color scale, when its derivatives entered the lists against death itself. Tar and coke now began to play a dominant role in technology. All this has developed from a substance the interpretation of which our best scientists seek today, and probably will seek for a long time to come, with only modest success. We must frankly admit that what millions of years have carefully and secretly created, human ingeniuty is able to solve only slowly and with great effort.

Complexity of Coal

Since the secrets of coal could not be wooed forth, when milder methods failed we were compelled to shatter it in order to get at its chemical treasures. Only from the fragments of its ruins have we succeeded in attaining the desired construction of the new and valuable mosaic. We split coal up into carbon monoxide and hydrogen, and then with the aid of the chemical magician, the catalyser, we form methyl alcohol and many of its homologous aldehydes and ketones, benziol, and viscous heating and lubricating oils. We compress coal dust as a pliant paste with hydrogen into pressure bombs, crack the coal in the protective medium and cause all the products of cracking to combine with hydrogen. The hydrocarbon by-products of coal have so many important uses, and are used in so many forms, that we might easily forget one hydrocarbon of a very especial kind which has also made its characteristic imprint on our age.

Christopher Columbus, the discoverer of this rich new world, brought this remarkable substance to Europe. However, centuries passed before the old world recognized the magnitude and significance of this western gift. Only in our day has this former museum rarity become common. Now every fifth person in your country drives an automobile with rubber tires.

The primitive forests of tropical America are the home of rubber. At first the wild growth satisfied the slowly growing demands of commerce. The primitive forest yielded about thirty thousand tons as its greatest yearly output. And today industry demands six hundred and twenty-five thousand tons and our demand continually increases.

First Rubber Cultivation

We owe it to the sharp insight of the Englishman Wyckam that the necessary material is available in sufficient quantities. He caught the idea of freeing himself from the whim of the primitive forest by rational cultivation. And when this far-sighted experiment proved successful, the new groves were able to meet the growing consumption. It was not America, however, which became the beneficiary of this momentous culture; in the farther East, the English and the Dutch owe in large part their economic development to this clever policy of cultivation of Wyckam and his successors. On the other hand, the United States is the best customer for this article of world commerce and will probably remain so in the future. The sums which change hands on the rubber exchange were subject to violent fluctuations and it was a simple but at the same time very painful problem in arithmetic for this country to find out what a rise in price of the indispensable rubber from 34c per kg. to $2.10 meant. In 1926 occurred the last great boom in the rubber market when prices varied between the above limits.

Almost twenty-two years ago when I was chemist in the service of the Elberfelder dye manufacturers, I began work on a synthesis of rubber. It took much daring, for experiments of this kind seemed to most chemists entirely hopeless. However, Carl Duisberg, the superintendent of our works in Elberfeld and Leverkusen, was interested in the plan and asked for the very considerable sum which I had requested, and excellent colleagues joined in my support. Was it a virgin chemical field which we were entering?

L to RUBBER

"You must not expect me to reveal any great secrets" Dr. Fritz Hoffman says frankly in this article, for there is great financial stake involved in the successful production of artificial rubber on a practical, economic basis. Millions await the victor in a world-wide and growing market: millions have already been invested in this scientific search. But this man who has lead the I. G. chemists in their rubber work for a quarter of a century hints rather plainly of impending victory. His review of this tremendous research puts one in touch with these painstaking developments so full of chemical economic significance.

No, the French, English, Russians, and Germans had been tilling the thorny field of rubber chemistry since the latter part of the preceding century. And a citizen of the United States, Goodyear, had contributed the greatest technical advance for the practical working of rubber, with his heat vulcanizing.

Rubber offered at first but slight opportunity for chemical research. It was with rubber as it was with coal. Nothing remained but to treat it in the same way. It was therefore, attacked with dry heat. Thus decomposed, as was to be expected, gases developed, liquids distilled off—very low boiling, mobile oils and finally viscous oils—and there was left behind a sort of coke. This was the not very encouraging beginning. Even today all the products of such treatment are not known; for the fraction of decomposed products which appear amount to only a few per cent. of the rubber experimented with. The clever insight of a Frenchman, Bouchardat, even when exact research into its chemical structure was still groping in the dark, suggested that this colorless liquid boiling at 33 °C might be the mother substance of rubber. His intuition was later shown to be correct. It turned the interest of scientists to the substance, isoprene, and hastened the solution of its constitution. The revelation of this peculiar substance as B—methyl—1-5 but adine was followed by its synthesis by several chemists. However, isoprene had not been rendered available by this means.

Even successful experimentors obtained the costly liquid only in drops, and no one could boast of more than a few cubic centimeters of it.

Tilden's Experiments

Next, the Englishman, Tilden, succeeded in splitting turpentine oil in such a way that isoprene was formed. The initially small yields were gradually increased by him and by others, and Tilden himself thought at first that he had found a method of commercial rubber synthesis. He believed that he had observed that hydrogen chloride changed isoprene into rubber. For seven years Tilden followed this idea. At length, however, he abandoned the plan. For the present consumption of the world-wide commercial product, rubber, turpentine oil would no longer be considered as a productive basis. The substance is not plentiful enough and is too dear. We also know that hydrogen chloride does not form rubber from isoprene. There can be no doubt that Tilden got a product from isoprene which was externally similar to rubber, but it is not rubber in the sense in which the rubber technologist knows it.

The qualities demanded of a technically usable rubber are so numerous that the enormous difficulty of their realization in an artificial product is sufficient to explain why we—in spite of abundant resources—have been working on this problem for twenty-two years without being able to say that we are finished or that the goal has been reached. None of you expect that I will tell you any secrets. A successful rubber synthesis it is not merely a question of general unselfish scientific knowledge. Here values are at stake which force me to weigh every word I write about these things, for such work includes a risk of millions, and many worries for those who have taken the risk. It would be perfectly proper to take the stand that it is better to remain entirely silent in public about such delicate matters. But it can do no harm for the public to learn that progress in so difficult a field is made, not by chance, but only by sober, purposeful work lasting over a period of many years. I have already referred to the fact that we have utilized the pioneer work of numerous scientists of various countries. What we have contributed of our own was recorded before the great war in about five hundred German and numerous foreign patents. Later more has been added. Those interested can see this material. They will soon find that it deals largely with very complicated matters through which a thread of continuity is difficult to find. This was, however, not our fault; but was due to the complexity of the material. It is a well known fact that the road to so distant a chemical goal often follows a devious route. At the conclusion of such a journey we may see no more clearly than at its beginning.

The Starting Point

We have chosen coal as the most important starting point for our synthetic plans. In the case of coal, the giant of raw materials, there is no such danger

as in the case of turpentine oil. Price will not fluctuate nor will a shortage occur even if ten thousand tons or even hundreds of thousands are used for our rubber manufacture. That our path from coal to rubber must lead over routes which have long since been easy for every chemist is clear.

Let us take acetone such as we used as a starting point with the twenty-five hundred tons of methyl-rubber which we produced during the war. We made it in an improvised plant started in 1916 and completed in 1917. The source for this acetone could then no longer be the Canadian grey lime formerly used, so we had to fall back on native coal. I need only indicate for you, of course, our stages: coal, coke, calcium carbide, acetylene, acetaldehyde, acetic acid, and acetone. A long road, to be sure, but necessity compelled us to follow it.

To carry out the synthesis of isoprene-rubber we followed a similar path: acetylene was heated in the presence of moisture to form acetone. At first it was only methods of formation which my fellow workers and I worked out, using as agents caustic potash or metallic magnesium; when, however, our colleague, George Merling, recommended sodium amide as carrier of the reaction a better and easier way to obtain isoprene resulted. The phases through which this process goes are: acetone and acetelyne are united to form methyl butinol. If this is carefully and partially hydrated, methyl butenol results; if water is removed from this, isoprene is left. Coal is, therefore, the fundamental substance. And this holds good also of the process which is perhaps historically the most interesting and which first brought us to synthetic rubber.

A well-known by-product of the coke-ovens, para-kaesol, was our starting point. After long years of work, beginning in the spring of 1907, my co-worker, Carl Coutelle, and I developed a technically practical way for hydrogenating this phenol according to the process of the Frenchman, Sabatier. The methyl cyclohexanol thus prepared in considerable quantities we subjected to oxidation with concentrated nitric acid, thus obtaining methyl adipin acid. This was treated with hydochlerous acid and in this way changed into the formerly hardly attainable—methyl tetra nethylendiamin. When we heated this strong base with methyl chloride under pressure we get from it the completely methylated quatenary ammonium salt. This product finally decomposed under distillation with caustic potash into trimethylamine and isoprene. And when we carried out the same series of reactions with phenol, the resultant was the gas 1-3 butadiene. Much work has been devoted to attempts to shorten this process which at first was far too long. These efforts, as our patents show, have been successful. This, however, does not change the fact that coal was always the real starting point and will probably remain so on account of the great advantages which this easily attainable and cheap material offers.

In August 1909 we succeeded in the Elberfeld dye works in transforming isoprene into rubber; in September in changing butadiene into its lower homolog, likewise a substance similar to rubber, and in changing B-V-dimethylbutadiene into the new heat-methyl rubber by heating this very volatile hydrocarbon under pressure with or without addition of contact bodies. A process cannot be simpler than this. Carl Harries has called it "the egg of Columbus".

We found out, however, that the process was not an unmixed blessing. The task of preparing rubber from coal through the mastery of chemical difficulties and the agglemeration of the isoprene molocules, unfortunately, did not have a happy outcome. For one who has gone this far trouble has just begun. The synthetic rubber cost 30. marks per kilogram and natural rubber had meanwhile dropped in price to the 1.40 marks.

Can you imagine a worse investment that this indispensable commodity? On what price can the maker of synthetic rubber count? If the natural product can be handled considerably cheaper how do his calculations stand?

Much more difficult than meeting the price is the matter of equalling or surpassing the qualities of vegetable rubber in an artificial material. The demands here are almost impossible, even though it were sufficient to change the light and volatile hydrocarbon into a solid colloid in a technically practical way. However, it is not the polymerisate as such which is desired, otherwise we would have attained our end long ago with our methyl rubber produced by heat polymerisation; for externally and in its behavior on the rolls it is almost an ideal product. But the preponderant mass of rubber must be subjected to mixture with other substances and especially must be subjected to vulcanizing, and everything really depends on the qualities of vulcanized product. It is a long way from coal to this touchstone of the quality of the finished product, to the sober values which the rending machine gives. It is necessary to possess an almost fabulous optimism not to fall prey, before reaching the goal, to the feeling of resignation to which the excellent Tilden succumbed.

One who has stuck to this task, however, for twenty-two years is likely to hope for final success. In the field of technology to which this conference is devoted scientists and practical men are accustomed to the overcoming of tremendous difficulties. They know that the mountain peaks are not reached by leaps and bounds but quiet, steady progress. The maker of synthetic rubber would not be worthy to work at his important task if he did not learn from his material that inflexible tenacity which will finally carry him—as I at least hope—to success.

United States exports of sodium silicate, amounting to $547,718 for the first ten months of 1928, are 26 per cent. greater than the total for 1927 (432,062). Estimates for the entire year 1928 indicate over 52 per cent. increase.

Saving through Wise Buying of Chemical Plant Equipment

By A. W. RUCKER

Wrong apparatus in the right place in a chemical plant is not only a wasteful use of capital, but it is also a fruitful cause of needless expense in production. Seldom is so vital a question so frankly discussed in a piece of advertising literature as in the article re-printed from a booklet published by the Sturtevant Mill Co., Allston, Mass.

ONE of the surprising facts about industry is the alacrity with which decisions to buy are made—and the resultant waste of something like ten or fifteen millions a year in machinery and materials that is caused thereby.

A banker walked through the plant of a Tennessee executive. "What is that equipment over there?" he queried.

"That," replied the executive, "is $20,000 worth of experience. We bought that equipment two years ago. It is perfectly good machinery. But we had to take it out. It is not the type that suits our process."

The banker thought a moment. "Your line of credit with us," he shot at the executive, "is $50,000. You are now using $40,000 of it. I presume that you have $20,000 of your capital tied up in that equipment. If I had presented you with an invoice for $1,200 for interest, wouldn't you have investigated more fully?"

Now 20 per cent. of the machinery bought in a year in this country is bought for the sole purpose of improving plant operation. This has no reference to the 38 per cent. bought to increase production, to expand facilities; it has no reference to the 11 per cent. bought as replacement of worn-out machinery; it has no reference to the 9 per cent. bought for new products. Twenty per cent. of the machinery is bought to improve operating conditions and cut costs. A striking indication that there is not enough time devoted to the proper choice of the *type* of equipment to be bought.

There ought to be a sharp distinction in the minds of operating officials and executive officers, in every plant, between the *type* of equipment and the *make* of equipment. Type and make are not synonymous. There is a sharp difference between screen and separating equipment as to type, and there are a score of makers of each type... revolving screens, vibrating screens, and air selectors.

There is a generally prevalent tendency to select the type of equipment to be bought without getting the facts about each type; without thoroughly studying the performance of each type in other plants. According to R. O. Eastman, Inc. (in a survey of industrial buying) only in nine per cent. of cases were experienced engineers of equipment manufacturers called in while plant officials were considering whether or not new equipment was needed; in only 14 per cent. additional cases were engineers called in when the type of equipment was chosen.

Yet in 68 per cent. of cases, salesmen whose duty it is to sell the *make* of equipment, were called in to compete.

A disproportionate attention paid to the make as compared with the attention paid to choice of the type.

The same fact is emphasized by these figures from the above survey:

In the purchase of equipment valued over $1,000 the average elapsed time from the suggestion of the need to the placing of the order was 99 days... in equipment costing less than $1,000, 30 days.

When the average time required by the purchasing department to secure the literature of manufacturers on each make is deducted from the above figures, not much time is left for unalloyed consideration of type without reference to make.

And yet the type of equipment and its suitability to the plant problem in hand is easily the most important consideration in buying. Upon the type more than the make depends maximum efficiency, for, says James H. Rand:

"The other possible answer to the pressure for low costs lies in our ability to overcome the handicaps of high-cost man-power by developing and perfecting automatic machine production."

Buying To Exact Standards

There are just three steps in the purchase of equipment, to wit:

Deciding that the equipment is needed;
Deciding upon the type of equipment;
Deciding upon the make of the type selected.

Which of these three decisions is the most powerful in influencing the course of future operating profits? Obviously, the first two. The fact that these two decisions are frequently made quickly and with ease, whereas the third is made with relatively greater difficulty, is simply indicative of the truth of the old aphorism—"the more we know about a thing, the less easily we are sure we know." In short, the difficulty in choosing the make of equipment is increased by the mass of information gathered about *makes*—if that same data were gathered about the application of *types*, the time required to select the proper type would be doubled. But the resultant increase in operating efficiency would be ample compensation for more time spent on *type*.

Now it is not difficult, in fact it is often very easy, to reduce selection of type of equipment to a highly accurate standard. Take the matter of screening and separating problems. Practically every plant need for such equipment divides itself into two parts—screening to remove the undersize or oversize material to relieve the reduction equipment, or, screening to size the material completely. Thus, it is simple and easy to divide a screening problem into one of coarse or fine screening.

If the problem is one of fine screening, these four types of separation should be considered:

a. Cylindrical revolving screens.
b. Shaking screens
c. Vibrating screens
d. Air separators

To choose the correct type in any given case, apply the following questions. Accurate answers will ordinarily indicate with accuracy the proper type.

a. Total feed, in tons per hour
b. Screen analysis of feed
c. Mesh of product desired
d. Capacity wanted in tons per hour
e. Must product be accurate, or is a 5 or 10 per cent variation satisfactory ?
f. Weight of material per cubic feet
g. Percentage of moisture
h. Method of feeding material to screen

To apply the foregoing concretely, take the problem of a soap manufacturer:

Here is a washing powder. It is ordinarily used for dish-washing. The housewife pours the powder into hot dish water. The presence in the powder of a high percentage of fines in the form of dust which floats on top of the water, and fails to dissolve causes an obnoxious cloud of dust to rise from the water. If these fines, therefore, can be removed, the product will be improved. A competitive advantage will result.

In this particular instance, application of the standard questions reduced the possible types of sizing equipment to two—the vibrating screen and the air selector. The final size of the product eliminated the vibrating screen (100 mesh), and also the vibration of a screen caused a grinding or grating action which made more powder. Dampness was another factor which eliminated screens.

Air separation is tentatively considered on the basis of the negative process of elimination. But final selection will depend upon the positive process of experience. What results have been secured by this type of equipment upon similar products; what is the performance record, the operating record, the efficiency record of this type ? If this experience exists, then it should be reviewed in the choice of type. If it does not exist for the peculiar problem in hand, a laboratory test is the answer. In the instance of the soap manufacturer here given, the laboratory test demonstrated separation of the fines 80 per cent. through 100 mesh, with an efficiency of 90 per cent. An Air Separator was accordingly installed and operated with profit.

Experience as a guide in choosing types of equipment is of two kinds—your own, and that of others. The difference is that the second kind costs you nothing except the effort to get it.

Approximately 20 per cent. of the machinery bought today is based upon pressure to improve operating conditions, including the product. That is, to find a more suitable *type* of machinery, for some one or more processes. Some remarkable results are following—and more will follow through the definite and rigid adherence to standards of selecting equipment types.

Such standards are available put into the hands of operating officials and plant executives, they have an enormous potential power in getting value received in equipment investment. They make possible something approaching buymanship in industry.

A new company known as "Carbonization Centrale" with a capital of 75,000,000 francs has been formed in Belgium for the construction of coke ovens and a by-product plant. Another recently formed concern, called "Societe Carbo-Chimique", with a capital of 150,000,000 francs, will manufacture products for the chemical industry. Both concerns have purchased land in Hainault for the erection of their plants.

American-La France & Foamite Corp. offers a system of carbon dioxide protection against fire, known as the Alfite system, which is said to be particularly applicable to fires in alcohols, ethers, acetones, creosotes, boiling linseed oils and lacquers.

Surface Combustion Co., Toledo, issues a new folder on special furnace for automotive production.

Construction Notes

Hoffmann-La Roche Chemical Works, New York, begins construction of new administrative and laboratory building at Nutley, N. J. It is expected that structure will be completed by May 1, 1929 at which time the company will transfer its headquarters from present home in New York, to the new building. Main building will be U-shaped in design, with frontage of 165 feet and wings at each end extending back 104 feet. It will be four stories high with each floor providing 15,000 square feet of space.

General Chemical Co., New York, plans construction of one-story addition to plant at Marcus Hook, Pa., comprising acid unit and filter house, reported to cost about $110,000 with equipment.

Chemical & Pigment Co., Inc., Baltimore, approves plans for two additions to St. Helena plant, each one-story, reported to cost approximately $80,000 with equipment.

United States Chromium Corp., Wilkinsburg, Pa., plans construction of new one-story plant unit, reported to cost approximately $45,000 with equipment.

American Enka Corp., New York, announces that contracts have been let for the construction of the $10,000,000 rayon plant at Asheville, N. C.

Van Schaack Bros. Chemical Works, Inc., Chicago, plans construction of addition to plant to cost about $50,000 with equipment.

Eastern Silicon & Chemical Co., Winchester, Va , plans erection of mill and pulverizing plant for production of silica.

Chemical Products Co., Chicago, is constructing a two-story factory in North Chicago, reported to cost $60,000.

E. I. du Pont de Nemours & Co. and Imperial Chemical Industries are erecting a joint factory at Deer Park, near Melbourne, Australia, for the production of artificial leather materials. This plant is understood to be one of the best arranged and most up-to-date of any in the world. The production of nitro-cellulose lacquers and similar products is also to be developed in Australia by the co-operation of the I. C. I. and du Ponts, but in this case there will be the further co-operation of the Australian interests of the Associated British Lead Manufacturers, Ltd., the factory under construction at Sydney being the result of the collaboration of the three firms.

Imperial Chemical Industries, Ltd., has completed the first five units of its synthetic ammonia and nitrate factory at Billingham, England, and has decided to proceed with operations in Australia. It is understood that £5,000,000 will be expended.

A bill to establish plants to demonstrate the chemical utilization of agricultural waste products is introduced in the senate, December 13, by Senator Thomas Schall of Minnesota. The bill calls for a potato alcohol plant in Minnesota, a plant in Georgia for making xylose from peanut shells, and plants for making pulp, paper, and board from straw of flax, wheat, and rice, sugar cane waste, and cornstalks.

South Metropolitan Gas Co., London, plans erection of low temperature carbonization plant. This is said to be first erected by a gas company in England and will operate on Parker process, owned by Low Temperature Carbonization, Ltd. Capacity will be over 2,000 tons of coal per week.

GAS MASKS

Protection for Chemical Plant Workers Against Various Types of Toxic Fumes

By VANDELL HENDERSON
Professor, Applied Physiology
Yale University

IN Europe it is charged that Americans value everything according to its cost. This charge is not true, but if it were, we ought to value the gas mask above every other human invention, for the gas mask has cost the entire expense of the great war, for the reason that (so far as I can discover) no good thing whatever came out of the war, excepting only the gas mask. The civilized nations spent ten million lives or more and hundreds of billions of dollars, and yet (as I have seen Europe lately) neither is "the world safe for democracy" nor is "war ended." But one thing civilization did get out of it all, and that is an excellent gas mask.

The first point which I wish to emphasize is this: There are many different kinds of gases, and these various gases have widely differing chemical characteristics. They are alike only in this one respect that they are all volatile. They differ also in their physiological effects; they have widely differing poisonous actions. They are alike only in this respect that they can all kill.

Suitable Masks Important

For these reasons when you place a mask upon a man going into a poisonous atmosphere, that mask must be adjusted to the kind of gas to which the wearer is to be exposed.

A mask to be effective must be in good order, and it must be suitable for the particular gas in which it is to be used. Often a factory buys a mask and hangs it on the wall. In the course of a year or two the rubber dries and cracks. Often it contains an absorbent for ammonia when it is to be worn in sulphur dioxide; but when it is worn in where it is unsuited, it costs the wearer his life.

Valuable as are suitable gas masks, unsuitable masks do far more harm than good for they give a false feeling of safety. It is important to reinforce the good and counteract the harm and danger of gas masks. To this end, I am going to run over the characteristics of the four principal types of poisonous gases.

The gas oftenest heard of a generation ago was what miners now call "black damp." It is simply a lack of oxygen in any atmosphere of other gases. No single gas can be separated in pure form and put in a bottle and labeled "black damp." As it is merely the absence of oxygen, the chemical test for "black damp" is that a flame will not burn in it. Its physiological effect is that a man who breathes it is asphyxiated by the lack of oxygen.

The test for "black damp" which has been used for 1,000 years or more is made by means of a lighted candle; if the flame is extinguished, the atmosphere is dangerous; if the candle continues to burn, the atmosphere contains enough oxygen to support life.

Physiologically "black damp" gives no warning; it produces no sensations. The victim often has no suspicion that anything is wrong until his legs fail and he falls helpless. No pain or even discomfort is involved in being thus overcome. The only discomfort is during a recovery unassisted by proper treatment; for unassisted recovery is prolonged, excessively painful, and sometimes incomplete. This in brief outline is simple asphyxia.

Related to this condition is carbon monoxide poisoning. This also is a form of asphyxia and acts, therefore, in much the same way physiologically as asphyxia by "black damp." But chemically it is entirely different. Everyone knows now that he must not go into a small garage and start his car unless he has opened the door first; that is, he must not do this unless he wants to die. Everyone knows now that carbon monoxide is the poisonous factor of illuminating gas, and that it is the constituent of smoke which overcomes firemen. Carbon monoxide results from incomplete combustion. It produces an asphyxiation which as far as the victim is concerned is very similar to "black damp." He feels no sensations in going under and dreadful sensations in coming back. He may suffer permanent injury, particularly to the heart, unless he is resuscitated properly.

On the other hand, from the chemical standpoint, an atmosphere dangerously contaminated with carbon monoxide is entirely different from an atmosphere of "black damp"; for a candle may burn well in it and give no warning. There is usually plenty of oxygen not only for a candle but for a man also, if it were not for the peculiar toxic effect of carbon monoxide. Even in a very poisonous atmosphere there is not enough carbon monoxide to explode; yet even a small amount is quickly paralyzing and fatal for a man, for it combines with the blood and thus deprives the body of its supply of oxygen. It thus acts as an asphyxiant even in the presence of ample oxygen. And because a man who has absorbed carbon monoxide continues to be asphyxiated even after he is brought into fresh air, it is especially important to apply measures of resuscitation which will eliminate carbon monoxide from the blood as rapidly as possible.

Much the same description applies to cyanide, or hydrocyanic acid gas, which is used now to kill rats and fleas in the fumigation of ships. Cyanide is a tissue asphyxiant even in minute amount. It differs from carbon monoxide in the fact that, if the victim does not die immediately, he generally recovers quickly and completely. So much for the three principal asphyxiants: "black damp," carbon monoxide and cyanide. We shall see later that each requires a different absorbent in the mask.

Irritant Gases

Next we will consider the irritants. Practically all the war gases are irritants. They do not asphyxiate directly; they attack the lungs, but in such subtle fashion that it may be hours before the victim drowns in the fluid which the injured lungs exude. Among the irritant gases are the acid fumes, the alkali fumes and related substances occurring in industry. Chief among them are chlorine, phosgene, sulphur dioxide, the red fumes, or oxides, of nitrogen, and ammonia. Hydrogen sulphide in certain concentrations comes under this class also; indeed at one strength or another it comes under nearly all classes of noxious gases. Mention must be made also of carbon tetrachloride when used for the purpose of extinguishing fire. Carbon tetrachloride itself is practically harmless. It can be swallowed; and it is so used, as a means of getting rid of hookworm. But if it is sprayed on hot iron it undergoes a partial oxidation and produces phosgene which is one of the most deadly of lung irritants.

A third group of gases, particularly important in the chemical industries, contains most of the volatile organic substances such as chloroform, ether, benzol, methyl and other alcohols, and the petroleum distillates. The primary action on the body of most of these vapors is like that of the anesthetics used in surgery. A surgeon could, in fact, anesthetize a patient with gasoline; the disadvantage would be that the patient would probably have convulsions before the surgeon had time to operate. Benzol is also an anesthetic but has other marked toxic actions. In fact this statement applies to most of the volatile organic substances included in this group.

Finally there is a fourth group of gases. Most of those which have been mentioned thus far are not what toxicologists would classify as protoplasmic poisons; but this fourth class includes

a variety of substances which are true poisons of the most active type. It includes tetraethyl lead, which killed a number of workmen a few years ago in a plant at Bayway. It includes also mercury vapor and arsenurated hydrogen and other metallic and organo-metallic substances. In any shop where mercury is used carelessly it may be spilled and trodden into the floor, or rubbed into the work benches. After a time there is thus enough surface of this volatile metal exposed to contaminate the air of the work room, and mercury poisoning may result. That mercury is volatile is demonstrated by the fact that, in nearly every chemical laboratory or industrial plant in which mercury is used, a good deal more mercury goes in than appears to come out. It comes out largely in the exhaust air; but unless the ventilation is good it comes out partly also in the bodies of the chemists and workmen.

With these four types of gases in mind let us consider the types of gas mask available for protection against them. There are three chief types.

First there is the hose mask. It is simply a facepiece, or hood, or helmet connected by means of a piece of hose to an air pump. The hose is light but wrapped with wire so that it cannot be kinked and shut off; and it is long enough to reach out of the poisonous atmosphere. This pump is worked by an assistant and blows fresh air to the man in the poisonous atmosphere. Where a hose mask can be used it is by far the safest and best form of mask. Under all such conditions it should be used in preference to any other type of mask. The reason the hose mask is the best of all masks is that as pure, fresh, outside air is blown to the man wearing it, it makes no difference what the character of the atmosphere in which he is working may be. That atmosphere may be dangerously contaminated with dust or asphyxiant gas, or volatile organic poisonous vapors or volatile inorganic posions; but the wearer of the mask breathes only pure air.

Disadvantages of Hose Mask

Unfortunately the hose mask has one unavoidable disadvantage in that it is limited by the length of the hose. For this reason, when the place where the man is to go is too far from fresh air for the hose to reach to it, then the true gas mask comes into use. The true gas mask has become a wonderfully fine instrument. It consists of a facepiece of heavy rubber with non-shatterable glass goggles. After an immense amount of experimentation it has proved possible to make facepieces which fit gastight on every shape of face, providing the size is right and providing the rubber is new enough to be soft and not cracked. This facepiece is connected by a short piece of non-collapsible rubber tubing to a tin canister containing the absorbent or catalytic materials which remove the poisonous gases from the air drawn through them. Two points must be attended to if the canister is to be used effectively and safely. The first is that there are four more different kinds of absorbent materials that may be put into the canister, and that each of these materials is effective only against certain gases and not against others. The type of catalyst or absorbent in the canister used must, therefore, be adjusted to the kind of gas in which it is to be carried.

The second point is that there is no possible adjustment of a canister gas mask which will make it effective for protection in "black damp", for it cannot produce oxygen. Against all other poisonous atmospheres, however, canisters filled with the correct material are now very efficient. For ammonia there is a absorbent or catalyst, and the canisters to be used at an ammonia plant should therefore be filled chiefly with this material. There is an entirely different catalyst for carbon monoxide, a catalyst which is extremely effective in decomposing this most common noxious gas of modern life. But this catalyst does not act upon ammonia. Ordinarily in an atmosphere containing carbon monoxide there is plenty of oxygen; and the air is, therefore, respirable providing the carbon monoxide is removed. But such a canister is not effective against the irritant acid gases. For them—but for them only—the absorbent which is effective is soda lime. The fourth type of absorbent is activated charcoal upon which vapors like benzol and gasoline and methyl alcohol will condense. This form of charcoal is extremely effective against volatile organic substances. It is, however, quite ineffective against carbon monoxide.

In addition there is the so-called "all service" mask. It contains a little of every kind of absorbent and is thus effective for a short time in any atmosphere, except "black damp." It is particularly useful when the nature of the atmosphere is unknown, as for instance in the smoke and fumes from a burning factory or warehouse containing many different chemicals. But as the "all service" mask can contain only a little of each absorbent the period during which it can afford protection is short.

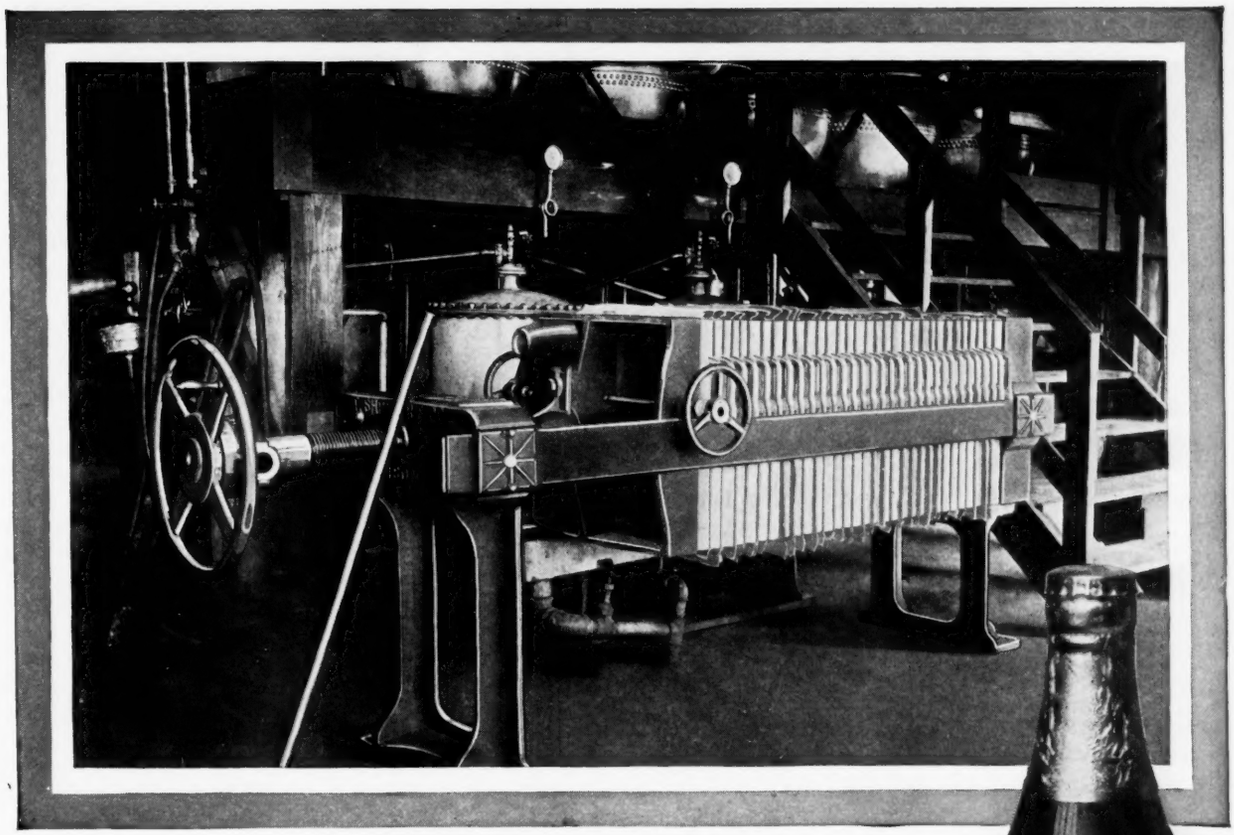
Most Important Rules

The most important rules to be followed in using gas masks are therefore, as follows: If you are going into a poisonous atmosphere where a hose will reach, use a hose mask. If you are going into a place where the hose will not reach and you do not know the character of the gases, use the "all service" mask. But be sure to carry a candle or a miner's lamp with you. If the flame of the candle or lamp goes out because of lack of oxygen, come out into fresh air quickly. If you are going into an atmosphere contaminated chiefly by smoke, use the mask with a canister containing the carbon monoxide catalyst and a smoke filter; but carry a candle or lamp. In case the candle or lamp is extinguished, then, but only then, it is advisable and necessary to use the third type of mask, which I have next to describe. In other words, use this third type only under conditions in which neither the hose mask nor the canister mask is practicable or safe, that is in atmospheres which do not contain enough oxygen to support life and in places which cannot be reached by a hose.

This third type of mask is the so-called "self-contained oxygen apparatus." While there are a number of different types of such apparatus, they all consist in principle of a breathing bag, a canister of soda lime, and a cylinder of oxygen. The wearer breathes back and forth into the bag; the carbon dioxide which he exhales is absorbed by the soda lime; and oxygen is fed into the bag as the wearer consumes it. A minor disadvantage of such apparatus is its weight and clumsiness. The great disadvantages are that its use requires training and experience, and that it is largely composed of rubber which deteriorates rapidly. Unless the rubber is very well taken care of, it cracks in little more than a year. The crack may not be noticed; gas may enter through it; and the wearer may be thus overcome and killed. The last time I investigated the matter, some years ago, I found that this type of apparatus had cost as many lives as it had saved. Rescue crews wearing oxygen apparatus may go into wrecked coal mines and bring out injured men; but unless the utmost care is exercised, and sometimes even then, a little crack in the mouthpiece of the apparatus, or some other defect, may cost the life of one of the rescuers. Oxygen rebreathing apparatus is an exceedingly valuable instrument; there are conditions in which nothing else can be used. But it should be used only by men especially trained to wear it, and only under the most carefully controlled conditions. It should never be used if either of the other forms of gas mask will serve the purpose.

Insecticide and Disinfectant Manufacturers' Association elects following officers: President, H. W. Hamilton, White Tar Co., Kearney, N. J.; first vice-president, Dr. Robert C. White, Robert C. White Co., Philadelphia; second vice-president, John Powell, John Powell & Co., New York; secretary, Harry W. Cole, Baird & McGuire, Holbrook, Mass.; treasurer, Robert J. Jordan, Wm. E. Jordan & Bro., Brooklyn.

According to "Le Nord Textile", an international Committee of representative European manufacturers of rayon has been formed for the purpose of standardization of rayon fabrics. The committee will attempt to obtain the adoption of uniform standards and the employment of uniform commercial practices in the different branches of the rayon industry.



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British Sulphate of Ammonia Federation Reviews Year

Nitrogen production during the past year has increased 420,000 tons or about 34 per cent. while consumption has increased 289,300 tons, or 22 per cent., according to the eighth annual report of the British Sulphate of Ammonia Federation. In reviewing the work of the past year at the annual meeting in London, November 15, Sir David Milne-Watson, chairman, said in part as follows:

"There was a very large increase in the output of nitrogen in the world during the year. The actual figure was about 420,000 tons of pure nitrogen, equivalent to an increase of 34 per cent. While the increase in consumption was not sufficiently large to absorb the whole of the increased output, it amounted to the very satisfactory percentage of 22 per cent. As I pointed out at our last meeting, there was only a moderate increase of about four per cent., in the world's consumption during the previous season, but taking the two years together we find an average annual increase of 13 per cent. This figure suggests that a cumulative increase is still continuing in the world's powers of absorption for nitrogen, for if we take the average percentage increases over the last four or five years we find that the average figure is 11 per cent.

"I am pleased to say that estimates which have recently been made regarding the consumption during the present fertilizer year, 1928-29, lead us to expect a further considerable increase.

"On the other side of the picture, however, we are faced with an increase in production of something like 22 per cent., assuming that the Chileans carry through their program and produce 500,000 tons of pure nitrogen. Unless our estimates for the increase in consumption are too conservative, it would appear that at the end of the present fertilizer year we shall reach the position which was predicted in our reports some years ago when the rate of increase in production will definitely outstrip the increase in consumption.

"In view of the favourable statistical position in June, 1928, the chief nitrogen producers in the world decided to maintain the same level of price for nitrogen during 1928-29 as was obtained for the previous year. It cannot be said that that level of price is satisfactory to by-product producers of sulfate of ammonia, but I am afraid that we shall only be deluding ourselves if we think that any improvement in the price is likely to take place.

"Turning now for a moment to our export markets, you will note with satisfaction that a very remarkable recovery has taken place as far as British trade is concerned. I regret to say that production has not yet completely recovered from the disaster of the coal stoppage and general strike of 1926, but the figures in the report show that we have had sufficient sulfate of ammonia to enable us to regain much lost ground in our overseas markets. It is particularly gratifying that our sales in Japan rose from 38,000 tons to over 100,000 tons during the year, and the fact that sales in China have again more than doubled leads us to expect still greater developments in that market.

"As regards India and Ceylon, I am pleased to be able to report a substantial increase in the consumption, especially of sulfate of ammonia, which has now reached the respectable figure of 30,000 tons per annum.

"In the home market we have done no more than mark time, but in view of the very difficult period through which farmers passed last season, I think we can congratulate ourselves that there was not a heavy fall in the consumption of nitrogen, and I think credit is due to the advisory service of Nitram for the fact that the falling-off in home consumption was so insignificant. You will see that reports from the districts indicate that nitrogen is being applied to at least 50,000 acres of pastureland under the new system of intensive grassland treatment, and I feel confident that as this system becomes more widely adopted we shall see a very considerable increase in the use of nitrogen at home."

Better Care of Drums Pays

By C. J. Colville
President, Newark Steel Drum Company

DURING the past five years a tremendous market has developed for drums, both new and second hand. As dealers in drums, we have had an opportunity to observe that a use can be found for all kinds and conditions of steel packages. Very often manufacturers have a container problem which can only be met by the use of second hand drums, due to the fact that new containers would be too expensive for the particular problem at hand. The problem which confronts the manufacturer who uses new drums exclusively is comparatively simple; certainly a different one from that which confronts the user of second hand drums. But in this article, we shall attempt to make suggestions for the better care of all steel drums and this, of course, applies to the buyer of new drums as well as second hand drums.

No one has a better chance to judge the results of careful handling and storage of steel drums than the man who handles them at second hand. One of the biggest dealers in the Metropolitan area points out that everybody benefits by the observance of a few simple rules for the care of these important containers, which he sets forth in this article.

It has always been a matter of considerable surprise to us that some manufacturers using drums as containers take what seems to be, at least to those in the drum business, so little care of them. This may be due to the fact that the use of drums followed the use of wooden barrels, and that the care of the drum is entirely different from the care of the barrel. By taking only a very few simple precautions the entire drum problem would often be greatly simplified. Also, the manufacturer, when he finally decides that his drums are no longer quite suitable for his particular needs, would find that their value to others would be greatly enhanced if good care had been taken of them during the time he used them. In other words, he first saves and then makes money by devoting some attention to his steel drums.

In cases where the manufacturer intends using a drum only once, the consumer who is left to dispose of the drum can make himself the beneficiary of a higher resale price by observing a few simple precautions while the drum is in his care. It is our opinion that this would react in favor of the manufacturer who originally sold this drum to the consumer, and that it would be well worth while for many manufacturers to encourage proper care of the packages sold to their customers by spreading such information among them.

Perhaps the greatest problem, both the hardest to prevent or avoid, and the hardest to repair, is the dented drum. This is usually caused by careless handling, and the human factor here is so large that it is impossible entirely to control it. But we can make a big improvement by calling this to the attention of those doing the actual handling, and perhaps in some cases it would pay to offer inducements to insure that the proper care is being observed. The most costly dents are the direct result of careless handling. If instead of just dropping the filled drum from the truck or car to the ground, those doing the unloading would drop it on a bag filled with sawdust, much of the damage by denting could be avoided. After the damage has been done, repairing is rather an expensive proposition and can only be undertaken economically by a manufacturer who is handling hundreds of drums of the same size. In this case, however, equipment can be built for forcing out dents by the application of water pressure from within, but such an operation will only pay when done on a comparatively large scale.

Second only to the dent is the problem of rust. The remedy is almost as difficult, due to the fact that most drums in general use are not constructed so that the interior is easily seen or easy to get at for cleaning. Much of the rusting of the inside of steel drums can be prevented by the simple precaution of making certain that all bungs are replaced or put back into the drums immediately after use. If that rule is carefully followed, the danger of rust formation is almost precluded. We get, in our business, a tremendous quantity of drums which are rusted inside due to exposure. Even among the drums which have had motor oils in them, over one-third are rusty inside due simply and solely to the fact that the bungs have been left out at one time or another. This is indisputable because most of the rust occurs near the bung which has been used for emptying the contents of the package.

The method of storage is also one of primary importance in dealing with this question of exposure and rust formation. Drums should be stored on their bilges or sides, as it is then impossible for water to accumulate on any part of the drum, whereas when drums are stored on their heads, the top head accumulates water. However, if it is necessary, for one reason or another, to store drums on their heads, the head which contains the vent plug or any opening should always be turned down, for water which accumulates in the head will eventually work in through the bung unless it is absolutely tight. Thus the method of storage always affects the outside condition, and sometimes applies also to the preservation of the inside of the drum. Of course, drums should be stored under cover, if possible, unless they are painted at regular intervals. But when it is necessary to store outside, and especially if they will be left outside for any length of time, or during the winter months, it is advisable to store them on strips of old lumber in order to keep them an inch or two off the ground and dry underneath. This also will save a lot of labor in the winter months as drums stored on the ground usually become frozen fast, and it costs a lot to move them.

We also urge the purchase of standard sizes of drums instead of odd sizes. This is in keeping with the well-known economic advantages of standardization, and follows the policies outlined by the Department of Commerce as a result of careful surveys of this subject. Apart from the well-known fact that new drums can be produced more cheaply in standard sizes, such drums have a greater resale value than those of special sizes. There is one other thing which we recommend, while, at the same time,

realizing that it will not find favor with all manufacturers. In purchasing drums, it seems to us wise to consider the fact that at some time these drums will be offered on the resale market. Here again it is obvious that the drums will have a greater resale value if they are not embossed with the previous owner's name or trade-mark. Of course, it is easy to understand that many manufacturers wish to have their drums identified or distinguished by some special marking, but when the manufacturer embosses his drum permanently with his name, he ruins its second hand value to others. We suggest that a serial number or some distinctive color scheme might be just as effective an identification mark as an embossed name or trade mark.

These suggestions are very elementary, but in their very simplicity lies their great value. There are a number of other precautions which apply to certain types of drums or certain industries which are not mentioned, and our hope is that this article will stir up some interest in the problem. A steel drum cannot be neglected many months before it becomes a piece of junk. Drums have acquired, and rightly so, a position of importance in the container field, and their usefulness cannot be over-estimated, but the effectiveness of the service they render may be greatly improved if a little care and thought are given to their handling.

I. C. C. Plans to Investigate "Container" Car on Carriers

Interstate Commerce Commission orders a complete investigation of the "container" car on interstate carriers. The inquiry will cover rates, charges, rules, regulation and practices, and also will go into the ownership, operation, use and management of this comparatively recent innovation in railroad service. The service concerns a facility whereby several large containers filled with commodities are loaded on flat cars and the entire container or steel box is removed at destination.

Investigation will be with a view to determining whether the present rates and practices are reasonable and in accordance with the Interstate Commerce Act.

Question was raised by the filing of an application by Missouri Pacific Railroad providing for container service on merchandise between St. Louis and various points. Inauguration of this service on the Missouri Pacific was opposed by several other railroads and also by the Chicago Association of Commerce which alleged it would be prejudicial to Chicago.

Order applies to all class I carriers and also includes barge lines. Proceeding was assigned for hearing here February 6 before Commissioner Claude Porter and Examiner Ames.

Pennsylvania Railroad announces inauguration of a new form of service for less-than-carload freight, based upon use of portable steel containers so constructed that they may be carried either on especially equipped railroad cars or on motor trucks. Its purpose is to make possible full co-ordination between motor trucks and rail facilities, and to meet the needs of shippers and consignees who desire to be relieved of handling their shipments between railroad terminals and their places of business.

The containers constructed for this service are of pressed steel and of uniform size. Each has a carrying capacity of 10,000 pounds and a capacity of 440 cubic feet. The floor space measures 6 feet 11 inches by 8 feet 11 inches, and the doors 5 feet 9 inches by 3 feet 6 inches, thus permitting the handling of individual articles of considerable size.

Interstate Commerce Commission dismisses complaint of Norris Fertilizer Co., Rushville, Ind., seeking lower combination freight rate on carload shipments of superphosphate from West Nashville, Tenn.

Complaint attacked the sixth-class rates north of the Ohio River, the factor south of the Ohio being the proportional rates prescribed for all Southern territory. Since the complaint was filed the commission has set a scale of freight rates for fertilizer materials for Central territory, and the combination of these rates with the rates south of the river is declared by the commission to be proper for the through movement.

Commissioner Eastman dissented, holding that through rates between the two territories should not exceed the Southern scale rate for the entire distance.

O. S. Sleeper, an engineer of wide experience in chemical and pharmaceutical equipment field, has recently become associated with F. J. Stokes Machine Co. and will be located in the company's new office building in Philadelphia.

Worthington Equipment for Buildings is the title of a 28-page bulletin, issued by the Worthington Pump and Machinery Corp., New York.

Diamond Alkali Co., Pittsburgh, places in operation at Painesville, O., plant a new Patterson Tube Mill of the continuous feed and discharge type for the grinding of their products there.

Brown Instrument Co., Philadelphia, announces removal of New York office to 117 Liberty St.

Globe Steel Barrel Co., Cleveland, moves New York office to 15 Moore st.

Freight rates on salt from central freight association territory to southeastern territory is brought under the consideration of the Interstate Commerce Commission in a complaint filed by the Ohio Salt Co., Wadsworth, Ohio. The complaint attacks the carload rates on salt in packages or in bulk from Rittman, Ohio, to Tennessee, Georgia, Alabama, and other southeastern states, and compares these rates with those from producing points in Michigan and Louisiana. The commission has docketed this complaint with 20,877, involving rates on salt from, to and between points in southern territory, and has set the combined docket for hearing in Cincinnati, January 14.

A commodity rate of 14 cents per 100 pounds on silicate of soda from Grasselli, N. J., to Maspeth, L. I., in place of the present rate of 16 cents is ordered by the Interstate Commerce Commission on complaint of the Star Corrugated Box Co., Maspeth, the reduction being based on rates on similar commodities for similar distances. Commissioner Taylor dissented on the ground that the movement is practically all switching service, involving four terminals and because of the empty return of tankcars.

Charles P. Devine is elected president, J. P. Devine Manufacturing Co., Buffalo, thus filling the vacancy caused by the recent death of his father, founder of the organization. Other officers elected were vice-president, H. H. Cust; secretary, C. W. Reynolds; and treasurer, D. P. Settlemore, David C. Arthurs and P. J. Cooney were elected to the board of directors, the latter also being appointed assistant to the president.

Officers for the Mid-West Shippers Advisory Board have been nominated as follows: general chairman, Geo. A. Blair, general traffic manager, Wilson & Co., Chicago; alternate general chairman, Lawrence Farlow, secretary, Farmers Grain Dealers' Association of Illinois, Bloomington, Ill.; general secreatry, J. E. Bryan, traffic manager, Wisconsin Paper & Pulp Manufacturing Traffic Association.

H. D. Grant is appointed chief engineer, Swenson Evaporator Co., Harvey, Ill. Since graduating from the University of Michigan in 1921, he has been engaged in chemical engineering, particularly the design and operation of heat-transfer equipment.

A differential of three cents per 100 pounds on ocean freight rates on jute and burlap from India, favoring Atlantic Coast ports over those of the Gulf States, approved by the Shipping Board.

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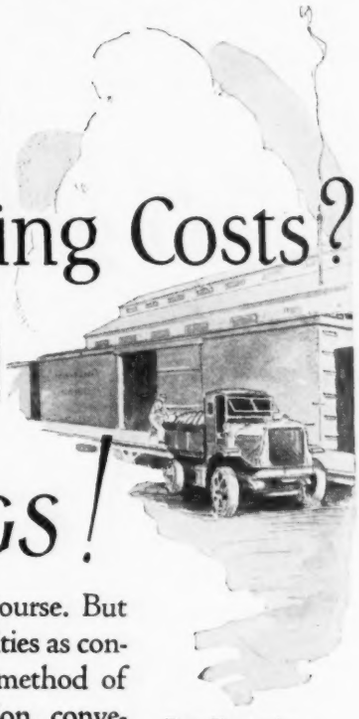

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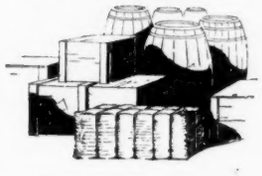

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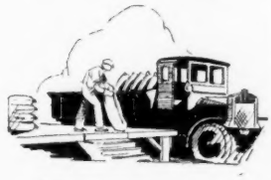

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U. S. Exports of Caustic Soda Indicate 13% Gain For 1928

Total exports of caustic soda for nine months of 1928 from the United States indicate an increase in the estimated exports for the entire year of 1928 of more than 13 per cent., as shown in the following table:

	1927 12 months	*1928 9 months*	*Estimated Gain Entire year 1928*
Europe	$68,907	$3,000	-92
North and Central America and West Indies	1,128,000	722,000	-15
South America	695,752	598,000	+15
Far East	1,093,325	1,202,000	+47
Africa	8,998	25,000	+270
	2,994,982	2,550,000	+13

This gain in total exports of caustic soda has been due to the increases in sales in the Far East, South American, and African countries, and has been accomplished despite a loss of some of the business from the North and Central American and West Indies countries and most of the European business. The increase in the Far East is attributable largely to Japanese purchases which show an estimated increase of over 62 per cent., together with those of China which have doubled, the Philippines with a gain of 15 per cent., while Java and Madura have taken about 10 per cent. more.

Of particular note in the South African group is Mozambique's purchases, which show over 50 per cent. greater than 1927. South American consumption of caustic soda from the United States shows a 15 per cent. gain, of which the greater part goes ito Argentina, Brazil, Colombia, and Peru. The estimated loss of 15 per cent. in sales to the group of North and Central American and West Indies countries is attributable to slight estimated losses among the principal consumers, namely, Canada, Mexico, and Cuba. The estimated loss of 92 per cent. to Europe is due to the loss of business on caustic soda to Italy for 1928 as compared to 1927 when sales amounted to $53,330. Thus, the effect of Italy's newly organized caustic soda industry can be seen.

The words, "coaltar products," mean any products of coal tar in a general sense and have no special technical or chemical meaning as far as the tariff law is concerned, the United States Court of Customs Appeals has held in a case brought by the Bakelite Corporation and William G. Fostern & Co.

These companies imported shipments invoiced as "coaltar distillate" and "crude cresylic acid," consisting of a mixture of coaltar pitch and cresylic acid; the cresylic acid content of the mixture, when subjected to distillation below 190° C., distilled less than 5 per cent. of tar acids, and when subject to distillation below 215°C., distilled more than 75 per cent. of tar acids. Under the decision this is dutiable at 40 per cent. ad valorem and 7 cents per pound under paragraph 27 of the tariff act of 1922 as a coal tar product. The importers claimed classification under paragraph 1549, which places certain coaltar products and mixtures on the free list.

The importers contended that the importations were not coal-tar products in a strict, scientific sense, but were mixtures of such products, such mixtures, from a chemical standpoint, not being coaltar products.

In application of Ralph N. Chipman for patent on weed killing solution, it was held that where an inventor discovers a particular chemical compound which will produce a certain result, he is not entitled to claim all compounds that will produce the same result; and he is not entitled to cover a group of elements unless the principle upon which his compound acts is one which obviously and clearly brings it within the well known mode of action of the group of elements.

In 1926, Florida mined more than 84 per cent. of all the phosphate rock produced in this country and nearly one-third of all that produced in the world. Tonnage in 1926 was 2,708,207 and the value was $8,683,508.

The Industry's Bookshelf

The Scientific World View, by William K. Wallace, 310 pages, Macmillan Co., New York, $3.00 net.

For the not-too-tired chemical executive, who knows well what science is doing to industry, here is a stimulating review of its effects upon religion and culture, with some bold prophecies of what it will do to love, war, business ethics, and other human relations. This is no book for the mentally lazy, for it promotes thinking, but it is so clearly and forcefully written that style reveals why the author was commissioned, during the war, to write the confidential summary of events that was sent from General Pershing's headquarters to the White House.

Industrial Explorers, by Maurice Holland, 347 pages, Harper & Bros., New York, $3.00 net.

Nineteen leaders of industrial research—among them such chemists as Reese, Baekeland, Hugh Moore, Barnard, and Little—are here written up in the style of an "American Magazine" success interview, with the object of humanizing what the author calls "this research game." It lacks DeKruif's vividness or the lucidity of Slosson, but no one in the industry, wanting to keep in touch with development work, should miss this volume.

Chemistry in Medicine, edited by Julius Stieglitz, 757 pages, The Chemical Foundation, Inc., New York, $2.00 net.

A co-operative treatise begun over three years ago by the Chemical Foundation, to show how chemistry has contributed to the progress of medicine and, by the same token, to point the way towards further accomplishment which lie in the future. It presents, for both the patient and the healer, the great possibilities for advance in medical science through further intensive co-operation between chemistry and medicine. Forty-three scientists, each an outstanding man in his particular field, have contributed the chapters.

Federal Phosphorus Co. plans construction of experimental plant at Anniston, Ala., where in co-operation with the United States Bureau of Standards and the University of Alabama, the company will conduct tests on the possible commercial production of xylose from cottonseed bran. It is said that xylose at present sells for about $100 a pound and thus has no commercial value, but if it can be made for 50 cents a pound, it could find a market in the rayon, explosives, leather, wool dyeing and flavoring extract field.

U. S. Government will begin production at new helium plant at Soncy, Tex., during January, 1929. Prospective gas-bearing holdings there amount to 14,000 acres and it is proposed to contract with Amarillo Oil Co. for rights to 25,894 additional acres. Closing down of plant at Fort Worth, Tex., has been ordered for January 10, due to fact that flow of natural gas from which helium has been extracted, is exhausted.

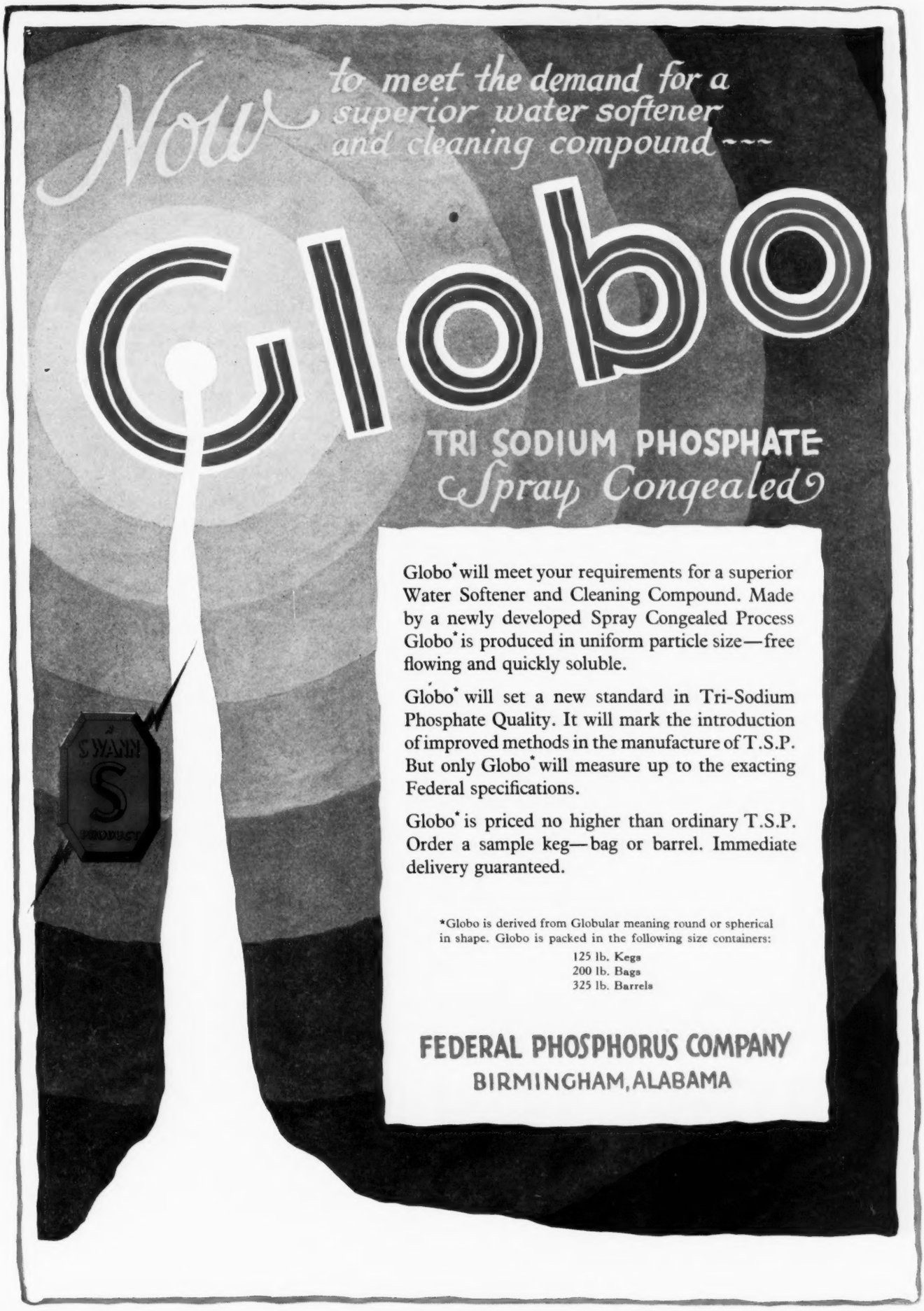
Glycerine is being produced from molasses in Czechoslovakia, by a fermentation process similar to the Protol Method used in Germany during the war, according to a report from that country.

Casein Products, Ltd., has been formed in New South Wales, with capital of £100,000 to manufacture casein and casein products.

Officials of American Zinc Institute, representing all producers of zinc in the United States, deny any agreement or understanding, implied or otherwise, with the European zinc cartel.

Radall Chemical Co., Brooklyn, is taken over by George A. Erkenbrach Co., New York.

Virginia Cellulose Co., Inc., announces that executive and sales offices are now at Delaware Trust Building, Wilmington.


Now to meet the demand for a superior water softener and cleaning compound ---
Globo
TRI SODIUM PHOSPHATE
Spray Congealed
Globo* will meet your requirements for a superior Water Softener and Cleaning Compound. Made by a newly developed Spray Congealed Process Globo* is produced in uniform particle size—free flowing and quickly soluble.
Globo* will set a new standard in Tri-Sodium Phosphate Quality. It will mark the introduction of improved methods in the manufacture of T.S.P. But only Globo* will measure up to the exacting Federal specifications.
Globo* is priced no higher than ordinary T.S.P. Order a sample keg—bag or barrel. Immediate delivery guaranteed.
*Globo is derived from Globular meaning round or spherical in shape. Globo is packed in the following size containers:
125 lb. Kegs
200 lb. Bags
325 lb. Barrels
FEDERAL PHOSPHORUS COMPANY
BIRMINGHAM, ALABAMA

Anglo-Chilean Nitrate Rumored About to Join Centralized Sales

Since the arrival at the Chilean capital of E. A. Cappelen Smith, president, Anglo-Chilean Nitrate Corp., controlling the American-owned nitrate fields, the interest of all producing companies, and of Cabinet members has been centered on what policy this important American concern would adopt regarding the plan being enforced by the government for nitrate sales in world markets under one central agency, says a report from Chile.

At the last meetings of the Nitrate Producers' Association in Valparaiso a representative of the Anglo-Chilean concern did not participate in conferences held by the centralized sales committee, thereby creating the impression that the American producers of nitrate soda preferred to remain apart and sell their production independently. Newspapers now indicate that recent meetings at Valparaiso, coupled with other activities here, seem to point to a new policy to be followed in the near future by the American producers and it is insistently rumored that the Anglo-Chilean Nitrate Corporation will join Chilean and British companies in operating the nitrate fields and throw in their lot with the rest of the members of the committee controlling the central sales policy. It is believed that such a move probably would benefit the nitrate market in general, offering unification of all interests and one front to fight the competition of artificial fertilizers in the world markets.

An important source of chromite which assays over 48 per cent. has been discovered west of Armstrong station, Ontario, Canada, in a dyke about 700 feet wide and a mile in length. This should be of interest to American chemical industries producing ferrochrome and other chrome chemicals since the United States consumes over one-third of the world's output of chromite.

Interests with which Lord Melchett is understood to be associated are planning to develop coal deposits at Mt. Telkwa, British Columbia, according to reports from Canada. Program is said to involve erection of plant for low temperature carbonization on Bussey system.

American Solvents & Chemical Corp. secures exclusive rights for the sale in the United States and Canada of vitrite, a mineral product used as an absorbing and decolorizing agent. Deposits of vitrite in India are controlled by a British syndicate.

Dyestuffs department, E. I. du Pont de Nemours & Co., Inc., announces two new colors, Pontacyl Fast Blue GR Concentrated and du Pont Violamine RR.

Frank W. Lovejoy, vice-president and general manager, Eastman Kodak Co., is elected a director, National Association of Manufacturers.

Aaron Winograd, for the past five years associated with the Pease Laboratories, Inc., New York, resigns to join the chemistry staff, Celanese Corp. of America, Cumberland, Md.

Coronet Phosphate Mining Co., Coronet, Fla., plans exploitation of additional phosphate deposits at Mulberry, Polk county, Fla.

Brooklyn Color Works, Inc., is constructing a new administration building and plans addition to laboratory.

Du Pont Cellophane Co. issues a new booklet of thirty-six pages entitled "Cellophane—The Modern Merchandising Aid."

P. O. Powers, formerly with Calco Chemical Co., is now research chemist, Acme Products Co., De Quincy, La.

Cosmic Color Co., New York, changes name to Contex Color Co.

Chemical Facts and Figures

Rossville Commercial Alcohol Corp. Formed by Large Merger

Second Large Merger in Alcohol Field in Recent Months Brings Together Rossville Co., Orange Grove Refining, Federal Products, Seaboard Chemical and Industrial Chemical — O'Shaughnessy, President, and Levin, Chairman of New Organization.

Setting at rest at least one of the current rumors concerning alcohol mergers, the formation of Rossville Commercial Alcohol Corp., is announced January 3, simultaneously with the offering of debentures and voting trust certificates of the new organization. Following the successful accomplishment of this financing the company took the second and final step in its financing program through an offering of 27,500 units of convertible preferred and common stock, the units consisting of one share of $7 cumulative dividend preferred and one-half share of common stock.

The concern organized under the laws of Maryland to acquire the business and properties of the Rossville Co., Orange Grove Refining Co., Federal Products Co., Seaboard Chemical Co., and the Industrial Chemical Manufacturing Co. Plants will be located at New Orleans, Lawrenceburg, Ind.; Cincinnati, Newark and Mechanicsville, N. Y.

New company's allotment under the United States Government restriction program is about 11,100,000 gallons, which makes it second in size in the country from the standpoint of allotment. This is the second large merger in this field in recent months, the previous one being the American Commercial Alcohol Corp., which consolidated the David Berg Industrial Alcohol Co., the S. M. Mayer Alcohol Co., Inc., and the American Distilling Co.

Coincident with the announcement of the company's formation, offering was made of 3,250 units of the corporation's debentures and voting trust certificates, each unit consisting of $1,000 twenty-year 6 per cent convertible sinking fund debentures and voting trust certificates representing five shares of no-par common stock. The units were priced at $1,060. The debentures will be convertible up to Jan. 1, 1939, into seventeen shares of common for each $1,000 of the debentures.

The authorized capital of the new company will consist of 35,000 shares of no-par value $7 dividend convertible preferred stock, of which 27,500 shares will be presently outstanding, and 300,000 shares of no-par value common, of which 120,000 will be issued.

Victor M. O'Shaughnessy, formerly, secretary, treasurer and general manager, the Rossville Co. and Orange Grove Refining Co., is president of the company, while Maurice Levin, formerly president, Dunbar Molasses Co., is chairman of the board.

Exposition Plans Announced

Twelfth Exposition of Chemical Industries will be held at the Grand Central Palace, New York, the week of May 6 to11. Attracting as it does, chemists, manufacturers, engineers and others, from more than forty industries in some way dependent upon chemicals of chemical changes, this biennial exhibit has been important as marking stages in the development of the chemical industry. It is expected that over 400 exhibitors will display their products, including varied types such as chemical engineering equipment and processes and special machines.

The exposition embraces in this wide range of exhibits products like apparatus for precise measurement of pressure, volume, flow, temperature, time; laboratory apparatus; supplies, chemicals, etc.; the raw materials used in all the chemical industries, the chemicals, dyestuffs, technical materials and chemical products which are applied in the industries and arts.

There are in the exposition special sections for laboratory equipment, a Southern section, and a Canadian section, where in the first case the raw materials (minerals, agricultural, and forestry products) suitable for development and manufacture as well as the developed and awaiting development water powers are likewise shown of the Southern States, which are at this time a most fertile field for finance and industry to invest in, and the Canadian section too demonstrates these possibilities.

The student's course of lectures, which has been an institution in the past expositions, will be repeated again. These lectures by authorities in their work are divided into two groups: one for elementary students where an extension knowledge has not been gained, and the other an advanced course for senior and graduate students.

These courses have been well attended at previous exhibits and many colleges give credit to the students for work done, which is tabulated and graded at the exposition by Dr. W. T. Read, professor of chemistry from Texas, Technological College, and a member of the exposition advisory committee, who is in charge of the course.

Monsanto Establishes New Development Department

Monsanto Chemical Works announces the following changes in organization. Company is establishing a Development Department to handle technical and scientific questions of consumers; to develop and extend markets for company's products; and maintain scientific and technical contacts with the chemical industry. L. A. Watt, Manager, formerly in charge of company's sales development laboratory and more recently Central District sales manager, will take charge of the new department. H. O. Parker will be one of the staff.

J. A. Berninghaus, formerly director of acid and heavy chemical sales, is appointed general manager of sales for the company, in direct charge of all sales and merchandising divisions. U. H. Deffry succeeds him as manager, acids and heavy chemical division.

Other appointments are James B. Reynolds as office manager Eastern District sales office, under Victor E. Williams as general manager; and Frank T. Robinson as Chicago District sales manager, with Frederick C. Renner as assistant manager.

International Combustion Engineering Corp., New York, announces that its subsidiary, the F. J. Lewis Manufacturing Co., producers of coal-tar products since 1887, will henceforth be known as the International Combustion Tar & Chemical Corp., with offices at 200 Madison ave., New York, and 2500 South Robey st., Chicago.

Company's six plants are located in the following cities:—Newark; Fairmont, W. Va.; Dover, Ohio; Chattanooga; Granite City, Ill.; and Chicago.

Tar requirements of these plants will be partially met by low temperature tar, produced by the low temperature coal carbonization plants now being built by the International Combustion Engineering Corporation. The first of these, will shortly be placed in operation at New Brunswick, N. J.

Personal and Personnel

John D. Gillis, formerly president and general manager, John T. Milliken Co., St. Louis, before that organization was absorbed by the Abbott Laboratories, Chicago, joins the executive staff, Monsanto Chemical Works, as assistant to the president. He was born in Stillwater, Minn., December 7, 1886 and educated at New York University. In 1915, he entered the drug and chemical business and has been actively associated with it ever since. Prior to his connection with John T. Milliken & Co. in 1920, he was secretary and general manager, American Chemical Products Co., New York. He is a member of the Chamber of Commerce, Manufacturers' and Merchants' Association, Missouri Athletic Association, Bellerive Country Club and other St. Louis organizations.

L. G. Blakeslee, for over thirty years associated with Mallinckrodt Chemical Works, in charge of the advertising department, announces his retirement at the annual banquet of the company's executives in St. Louis, December 15. Edward Mallinckrodt, on behalf of the firm presented him with a watch in appreciation of his services. His retirement is effective as of January 1.

In 1893, F. W. Matthiessen started at La Salle, Ill., the first plant for the manufacture of by-product sulfuric acid in the United States. To-day his grandson, Phillip Challenger, having reached the age of 21, faces the problem of how to spend $1 000 a day, representing the income on $6,000,000 left to him by the pioneer manufacturer.

William T. Banning, for the past eight years assistant sales manager, Philadelphia district, Paint & Varnish Division, E. I. du Pont de Nemours & Co., is appointed district sales manager, trade sales, for the New England district of the division, succeeding the late Benjamin H. Ring.

Francis P. Garvan, head of the Chemical Foundation, gives $10,000 to Johns Hopkins University, for the enlargement of the laboratory of Dr. Joseph Colt Bloodgood cancer specialist. He will also give $10,000 a year for five years for the support of Dr. Bloodgood's research work.

Five out of the nine members of the special committee on finance, American Association for the Advancement of Science, are from the chemical industry. They are A. Cressy Morrison, L. H. Baekeland, Charles H. Herty, August Merz and W. H. Nichols.

Leonard T. Beale, recently elected president, Pennsylvania Salt Manufacturing Co., resigns as vice-president, John T. Lewis & Bros. Co., although he retains his position as a director. The new Pennsylvania Salt president is grand-nephew of George T. Lewis, founder of the Pennsylvania company.

Charles L. Burdick severs connection with Guggenheim Bros., and resigns as vice-president and consulting engineer, Anglo-Chilean Consolidated Nitrate Corp., to become director of development, Lazote, Inc.

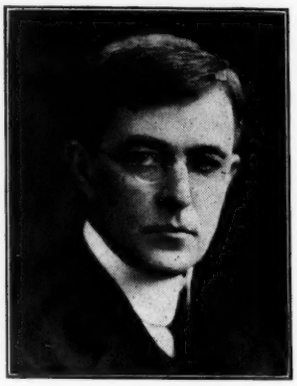
W. P. Horst,' research chemist, formerly with Rubber Service Laboratories Co., Nitro, W. Va., resigns to become associated with U. S. Rubber Co., Passaic, N. J.

H. M. Johnson resigns as president and general manager, Johnson, McKim, Johnson Co., Linden, N. J., to become affiliated with Roxalin Flexible Lacquer Co.

James T. Skelly, Hercules Powder Co. is elected a director, of the American Mining Congress.

Langmuir is Elected President of American Chemical Society

Dr. Irving Langmuir, assistant director, General Electric Research Laboratory, Schenectady, is elected president of the American Chemical Society for 1929, succeeding Prof. Samuel W. Parr, University of Illinois. The latter was in turn elected president-elect for 1929 and automatically becomes president in 1930, in accordance with constitutional changes recently adopted. Other officers elected were: director from second district, Wilder D. Bancroft, Cornell University; director from fifth district, Frank C. Whitmore, Northwestern University; councilors-at-large, E. M. Billings, Rochester; Hugh S. Taylor, Princeton University; E. R. Weidlein, Mellon Institute; and M. C. Whitaker, New York.



Dr. Langmuir, the 1927 Perkin medallist, was born in Brooklyn, January 31, 1881, the son of Charles and Sadie Commings Langmuir. Following graduation from Chestnut Hill Academy, Philadelphia, in 1895, he entered Pratt Institute in 1896. In 1899 he entered the Columbia School of Mines and received the degree of Met. E. in 1903. Then followed three years at the University of Gottingen, Germany, and his ph.D. in 1906. Following three years' service as an instructor in chemistry at Stevens Institute of Technology, he joined the staff of the German Electric Laboratory, July 9, 1909, and has continued there ever since.

A member of many scientific societies, Dr. Langmuir was president of the Institute of Radio Engineers in 1923. He is a member of the Chemists' Club, New York, and Mohawk Club and Mohawk Golf Club, Schenectady.

J. T. Baker Buys Taylor Chemical Co.

J. T. Baker Chemical Co., Phillipsburg, N. J., purchases assets of Taylor Chemical Co., and organizes the Taylor Chemical Corp. The old company will be dissolved and the new corporation operated by the Baker company as a subsidiary. Frank D. Berry, president of the old company remains as a director, while other members of the board are Herbert H. Carls, John T. Baker, J. L. K. Snyder, and Ralph A. Clark. Carbon bisulfide output of the Taylor company was sold by J. T. Baker Chemical Co. during 1928. It is said that satisfactory tonnage has already been booked for 1929 and it is expected that additions and improvements will be made shortly.

Taylor Chemical Co. was organized by the late Dr. E. R. Taylor in 1900. He began the manufacture of carbon bisulfide by the electrolytic process known as the Taylor process. Since 1917, Frank D. Berry has managed the company. Company's plant is at Cascade Mills, N. Y.

This is the second acquisition made by J. T. Baker Chemical Co. in 1928, the other being the purchase of the Dissosway Chemical Co., Brooklyn, in May.

H. L. Derby, president, Kalbfleisch Corp., New York, is appointed a member of the committee of the National Manufacturers' Association, which is to draw up a plan for taking the tariff out of politics.

E. H. Killheffer, president, Newport Chemical Works, Passaic, N. J., is elected president, and William R. Moorhouse, National Aniline & Chemical Co., New York, is elected a counselor of the American Association of Textile Chemists and Colorists.

News of the Companies

E. I. du Pont de Nemours & Co., Inc., announces the following changes in the sales organization, paint and varnish division. J. E. Schuyler, formerly supervisor, eastern Pennsylvania and southern New Jersey, is made special representative to close up important trading centers and department stores, J. K. Spare, who has been covering Allentown and Reading territories, succeeds him as supervisor. J. N. Werntz relinquishes supervisorship of Pittsburgh territory and will be assigned to other duties. W. W. Lafferty with the sales force in the Wheeling district, has been promoted to succeed him as supervisor in Pittsburgh.

With the jovial Edward Van Berlo as master of ceremonies, employees of the Wilckes-Martin-Wilckes Co. held their annual dinner and entertainment, December 11, at the Toppin Inn, Westville, N. J. Ferdinand Wilckes, Luther Martin, John J. Heck and George T. Short spoke during the evening. The gathering was in the nature of a Christmas party and also a testimonial to John J. Heck, who during the year was promoted to the position of general superintendent of the Camden works.

Hercules Powder Co. announces following changes in personnel: Luke H. Sperry, superintendent, Kenvil plant, is now manager, Virginia Cellulose Co., Hopewell, Va., H. V. Chase, superintendent, Bessemer, Ala., plant, succeeds him at Kenvil, and is in turn succeeded by H. B. Sanders, assistant superintendent, Carthage, Mo. plant. J. O. Lowe is promoted from acid supervisor to assistant superintendent, Carthage plant.

Grasselli Chemical Co., subsidiary of E. I. du Pont de Nemours & Co., purchases 20 acres of land in Ecorse, near Detroit, on Michigan Central Railroad and Detroit River. The land and first manufacturing unit soon to be constructed will cost $1,000,000, while units to be built in the next five years will bring the investment of $5,000,000. New plant will manufacture sulfuric acid and other heavy chemicals.

Final argument in its complaint against the Pennsylvania Salt Manufacturing Co. will be heard by the Federal Trade Commission January 23. The company is charged with violation of the Clayton act in purchasing the Michigan Electrochemical Co., allegedly to suppress competition in bleaching powder.

National Chromium Corp., New York, develops a process for the chromium plating of aluminum, by which the aluminum is first plated with nickel and then with chromium.

Victor Chemical Co., New York, begins manufacture of formic acid, said to be the first engaged in this country in about five years.

Eastman Kodak Co., Rochester, N. Y., takes group insurance for twenty thousand employees involving an initial insurance company payment of $6,500,000 and large annual premiums.

Publicker Commercial Alcohol Co., Philadelphia, plans rebuilding of Plant No. 1 which was partially destroyed by fire, October 28.

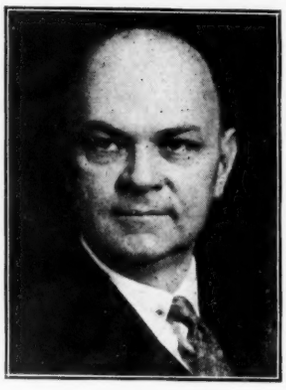
Kentucky Color & Chemical Co., Louisville, Ky., purchases ten-acre tract in Kearney, N. J., for improvement with a large plant for the manufacture of chemicals.

Seaboard By-Product Coke Co., New York, appoints Marschalk & Pratt, Inc., New York, to direct its advertising account.

Weyth Chemical Co., Jersey City, increases capital from $350,000 to $500,000.

Hudson to Receive Gibbs Medal

Dr. Claude S. Hudson, professor of chemistry and chief, chemical division, Hygienic Laboratory, United States Public Health Service, will receive the Willard Gibbs Gold Medal for 1929, according to an announcement of the American Chemical Society. Formal presentation of the award, which is made annually by the Chicago section, American Chemical Society to a chemist whose work in either pure or applied chemistry has received worldwide recognition, will take place in Chicago in May.



Dr. Hudson was born in Atlanta, Ga., January 26, 1881. He received his early education in the South, was graduated from Princeton University in 1901, and later completed his training in several German Universities. Early in his career he became associated with the United States Geological Survey and since that time has devoted most of his life to government work. His researches have been carried out largely in the U. S. Bureau of Standards, 1923-28, and in the Bureau of Chemistry, Department of Agriculture, 1908-1918. He is best known for his researches in sugar chemistry and his recent work at the Bureau of Standards on the structure of the sugars has attracted wide attention among organic chemists.

Previous recipients of the Willard Gibbs Gold Medal have included Svante Arrhenius of Sweden, Madam Curie of France, Sir James C. Irvine of Scotland and the following Americans: T. W. Richards, L. H. Baekeland, Ira Ramsen, Arthur A. Noyes, Willis R. Whitney, E. W. Morley, W. M. Burton, W. A. Noyes, F. G. Cottrell, J. Stieglitz, G. N. Lewis, M. Gomberg, J. J. Abel, W. D. Harkins.

Merz Re-elected President of S.O.C.M.A.

Sandwiched between heavy discussions of proposed tariff revisions, the Synthetic Organic Chemical Manufacturers' Association at its seventh annual meeting, December 14, at the Hotel Commodore, New York, elected the following officers for the coming year: president, August Merz, Heller & Merz Co., New York; treasurer, Albert J. Farmer, Pharma-Chemical Corp., New York; vice-presidents, Ralph E. Dorland, Dow Chemical Co., New York; W. F. Harrington, E. I. du Pont de Nemours & Co., Wilmington, Del.; E. H. Killheffer, Newport Chemical Works, Passaic, N. J.; and A. Cressy Morrison, Carbide & Carbon Chemicals Corp., New York.

In addition to these officers, the board of governors includes the following: E. A. Barnett, John Campbell & Co., New York; J. W. Boyer, Monsanto Chemical Works, New York; A. S. Burdick, Abbott Laboratories, North Chicago, Ill.; R. W. Cornelison, Peerless Color Co., Plainfield, N. J.; Glenn Haskell, United States Industrial Chemical Co., New York; E. H. Klipstein, E. C. Klipstein & Co., New York; William S. Weeks, Calco Chemical Co., Bound Brook, N. J.; S. W. Wilder, Merrimac Chemical Co., Boston, Mass.; F. G. Zinsser, Zinsser & Co., Hastings-on-Hudson, N. Y.

Magnetic Mfg. Co., Milwaukee, manufacturers of the "High Duty" magnetic separators, magnetic clutches and special magnetic equipment, announces that effective January 1, its products will bear the trade name "Stearns" in addition to the former trade name "High Duty". This action was prompted by the need for a more specific identification of its products as compared to the general term "High Duty" used in the past.

Tax Refund List Shows Names of Many Chemical Companies

That honesty, or perhaps inaccurate accounting, is the best policy is amply testified to by the following who were among those sharing in the Government "melon" of refunds on taxes erroneously or illegally collected: Adamson, George P., $3,405,38; Parkinson Coke & Coal Co., $556.38; Ahumada Lead Co., $4,783.06; Air Reduction Co., Inc. $46,420.03; American Cyanide Co., $21,677.40; American Linseed Co. of N. J., $742, 994.13; American Smelting & Refining Co., $311,078.43; Barrett Co., The, $90,342.78; Bird, Archer Co., $628.14; Bon Ami Co., $9,804.13; Bristol-Myers Co., $1,661.33; Certainteed Products Corp., $4,689.96; Childs, Eversley, $1,556.72; Chipman Chemical Engineering Co., Inc., $1,974.33; Chiris Co., Antoine, $630.05; Coignet Chemical Co., $5,834.43; Freeport Texas Co., $473,870.19; General Ceramics Co., $761.41; Heller & Mertz Co., $626.57; Jardine, Matheson & Co. Ltd., $4,024.83; King & Co., J. B., $1,713.15; Lehn & Fink, $1,511.12; McAndrews & Forbes, $113,870.65; MacGowan, Helen R., $1,047.44; Malt Diastase Co., $3,188.31; Mathieson Alkali Works, $8,289.40; Mendelson Corp., $844.68; Metz, Herman A., $4,943.75; National Aniline & Chemical Co., $81,573.57; New Jersey Zinc Co. & Sub. Co., $2,698.52; Nichols, Dr. Wm. H., $22,887.71; Pfizer & Co., Inc., $13,790.85; Potash Importing Co., of America, $914.52; Rogers, Pyatt Shellac Co., $555.53; Ruhm, R. D., $515.09; Standard Chemical Co., $52,245.81; Union Sulphur Co., & Progress Oil Co., $3,218.94; U. S. Industrial Alcohol Co., $9,178.23; Vanadium Corp., of America, $70,418.09; White, Frederick W., $3,137.92; Chemists' Club, $23,690.68; Commercial Solvents Corp., $7,829.90; Kalbfleisch Corp., $21,149.63; Union Carbide & Carbon Corp., $3,342.58; Arlington Chemical Co., $5,107.95; Eastman Kodak Co., $149,582.52; Kellogg & Sons, Inc., $63,119.90; Maywood Chemical Works, $78,063.00; Penobscot Chemical Fibre Co., $302,264.00; Hercules Powder Co., $268,107; Cabot Mfg. Co., $13,381.15; Merrimac Chemical Co., $37,705.18; Colgate & Company, $7,660.14; Colt Dye Works, $1,190.29; Duratex Corporation, $1,287.95; Edgar Bros. Co., $35,247.21; Johnson & Johnson, $5,570.31; Liondale Bleach Dye Print Works, $2,099.30; Maywood Chemical Works, $78,064.06; National Silk Dyeing Company, $22,343.57; Peerless Color Co., $1,743.36; Ross Company, Inc., $1,504.61; Standard Bleachery Co., $1,450.73; Whitall Tatum Co., $3,052.22; Wolf, Jacques, $840.35; American Glue Co., 67,196.97; Cabot, Godfrey, L. $5,235.11; Howe & French, Inc., $716.90; Mount Hope Finishing Co., $9,972.88; United Drug Company, $17,436.06; Rosengarten, Estate of Fanny, $26,981.06; Gray Chemical Company, $11,668.51; Thermatomic Carbon Co., $8,030.44.

Dow Chemical Co. announces that D. W. Williams, formerly with calcium chloride sales division, is appointed assistant sales manager in charge of that department, succeeding S. W. Putnam, resigned.

American Commercial Alcohol Corp., New York, publishes a handbook for users of denatured alcohol entitled, "Alcohol for Industrial Purposes". Copies may be had upon application.

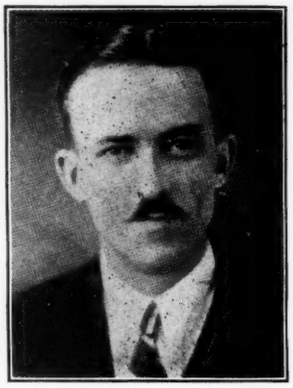
Theodore F. Merseles, president, Johns-Manville Corp., and formerly president, Montgomery Ward & Co., is elected a director, Celanese Corp. of America.

E. B. Filsinger, formerly director of foreign sales, is elected vice-president in charge of foreign sales, Royal Baking Powder Co. A. C. Monagle, formerly sales manager, is elected a director and vice-president in charge of domestic sales.

Carl F. Weigel, formerly chief engineer, is elected vice-president and general manager, Hedges-Walsh-Weidner Co., Chattanooga, subsidiary of Combustion Corp. of America.

R. J. Flood Now With R & H

Richard J. Flood, for the past four years, New York Commercial Agent, Chemical Division, Bureau of Foreign and Domestic Commerce, United States Department of Commerce, becomes associated with the Roessler & Hasslacher Chemical Co., New York, as assistant manager, legal department, under J. Carlisle Swaim. Previous to his connection with the chemical division, Department of Commerce, he was a member of the bar, District of Columbia. In his new connection, he will also assist in sales research work.



J. Carlisle Swaim, who recently succeeded the late P. Samuel Rigney, in charge of the legal department, Roessler & Hasslacher Chemical Co., was formerly associated with the law firm of Merrill, Rogers, Gifford & Woody, New York, and has had about 15 years legal experience in general and corporate practice, as well as trial and appellate work.

Richard P. Hendren, Philadelphia, who succeeds Mr. Flood as New York Commercial Agent of the Chemical Division, was formerly, Eastern Division manager, United States Sandpaper Co., Williamsport, Pa.

Salesmen Frolic at Annual Party

Tommy again lapped the field of contenders for attention at the annual Christmas party of the Salesmens' Association, at the Hotel Brevoort, New York, December 28. However, she was forced to set a fast pace in order to finish well ahead of a quartet, or better, of Grasselli boys and others, who put on a song and dance act of their own at the up-town end of the banquet hall. Frank Turner also ran.

The dinner and entertainment were all that could be desired and all those who have been located since reported that they had had a great time. The occasion was also marked by the regular yearly appearance of the "Chemical Peddlar" which was eagerly devoured by its waiting public. The committee in charge of the party consisted of Fred A. Koch, Dow Chemical Co.; Edward S. Burke, Edward S. Burke & Co.; W. H. Adkins, Givaudan-Delawanna, Inc.; B. J. Gogarty, American Solvents and Chemical Corp.; J. E. Butler, Jr., American Solvents and Chemical Corp.; Julius Tumpeer, Wishnick-Tumpeer Chemical Co.; Frederick Edel, Roessler and Hasslacher Chemical Co.

Joseph J. Darvin, formerly with the Republic Chemical Corp., New York, and more recently with the Greendale Co., Lawrenceburg, Ind., is now conducting a general business in chemicals at 55 W. 42 st., New York.

M. B. Fuller, president, International Salt Co., Scranton, Pa., is one of the new directors of the Buffalo, Rochester & Pittsburgh Railway, recently purchased by Van Sweringen interests.

George Eastman, Rochester big-game hunter, philanthropist and fine chemical manufacturer, appears before House Foreign Affairs Committee in support of 13-month calendar.

Thomas J. Reese, formerly manager, Buffalo plant, Ault & Wiborg Co., New York, is made president and director of the company.

J. L. Tildsley, Jr., formerly with the American Cyanamid Co., New York, is now with the tar products division, International Combustion Tar & Chemical Corp.

"Color", Applied to Dyes, Means Shade and Not Name, Court Holds

The word "color", as applied to dyes in the tariff act of 1922 means a shade, and not a name, the United States Court of Customs Appeals holds in case brought by the Sandoz Chemical Works.

Three dyes were imported under the names, "xylene milling blue B.L. conc.," azo rubinol 3 GS conc.," and "chloramine blue 3 G conc.," and were assessed at 7 cents per pound and 45 per cent. ad valorem, the weight being computed by the lowest known commercial strengths of the dyes multiplied by their strength when imported. This was done under paragraph 28 of the act, which provides that the Secretary of the Treasury shall publish lists of standard strengths of dyes to be used in such computations. The names of the three dyes imported did not appear on the list in force at the time of importation, but the collectors found the dyes to be the same as dyes of other names on this list.

The importer protested that since the dyes were not named on the official list they should be assessed duty on the actual weight.

The court said:—

Should paragraph 28 be held to compel the Secretary of the Treasury to specifically name each product which might, by any possibility, be imported into the country under any name before it can be assessed with a specific duty according to its strength, or is it to be held that if it is the same dye or article which has already been named as a standard by the secretary, even though it bears another name, it shall pay duty according to that standard ? We are convinced that the latter view is the sound one.

It is argued that the secretary must adopt a "standard for each color." That is true, but a color is a color, not a name. A dye is a dye, not a designation.

The trade practice conference in the fertilizer industry has been set by the Federal Trade Commission for January 29, in New York.

The conference was requested by the last convention of the National Fertilizer Association and was authorized by the commission some time ago, but the date was not set. The conference will be open to the public and an effort will be made to send an invitation to all fertilizer manufacturers, whether or not connected with the association. The code of ethics which the association adopted two years ago will form the basis for discussion at the meeting, but the conference will not be limited to this code. Any matter affecting the fertilizer industry can be brought up and action proposed. The code has never been passed on by the commission, but was submitted to the Department of Justice, which approved it.

Dry Ice Corp. of America signs contract with Carbide & Carbon Chemicals Corp. whereby supplies of carbon dioxide gas available at the latter's plant will be utilized by Dry Ice Corp. in production of dry ice. Under the contract an initial plant having capacity of 60 tons dry ice daily is to be erected at Niagara Falls, N. Y., and be in production May 15, 1929. Additional units will be erected as demand warrants.

Arkansas Chemical Co. plans manufacture of alum at Picron, Ark., plant. Company is capitalized at $25,000 with following officers: Poole E. Russ, president; E. M. Gatwood, vice-president and general manager; John M. Davis, Jr., Secretary-treasurer.

C. K. Williams & Co. of California, subsidiary of the Easton, Pa., firm of the same name, begins operations of its dry color plant at Emeryville, Cal. Marshall Dill, San Francisco, continues as Pacific Coast sales agent for the company.

American Solvents & Chemical Corp. leases thirty-second floor in new Chanin Building, New York.

Acetone Now Dutiable in Britain

In extending to December 31, 1929, the exemption of a number of specified chemicals from duty under the protection of industries act, the British Government has not included R acetone, fermentation acetone, and synthetic acetone in the list. These articles will be dutiable from January 1.

The new list does not extend the exemption of ethylene glycol, although it does rename glycol ethers.

Several additions have been made to the exemption list for 1929, and it will apply to the following:—Amidopyrin, ammonium perchlorate, antipyrine, barbital, bromural, celtium oxide, chinosol, cocaine (crude), dial, dicyandiamide, didial, dimethyl oxychinizin, dysprosium oxide, elbon, erbium oxide, ethylene bromide, eukodal, europium oxide, furfurol, gadolinium oxide, glycol ethers, guaiacol carbonate, holmium oxide, hydrocyanic acid (anhydrous), hydroquinone, lactic acid (B. P.), R lead acetate, lead tetraethyl, lipoiodin, lithium carbonate, lithium hydroxide, lutecium oxide, metaldehyde, methyl chloride, methylsulfonal, nickel hydroxide, papaverine, phenacetin, phytin, piperazin, R potassium chlorate, potassium guaiacolsulfonate, R potassium hydroxide, R potassium permanganate, pyrimidonveronal, quinine ethylcarbonate, resorcinol, salol samarium oxide, stryacol, sulfonal, synthalin, terbium oxide, thulium oxide, urea, vanadium-silica catalysts, ytterbium oxide.

An example of unusual and especially clever chemical advertising is the above product of Monsanto Chemical Works which appeared recently in the St. Louis Globe Democrat.

William W. Pickens, president, Davison-Pick Fertilizer Co., New Orleans, dies December 5, aged 58. He was born in Arcola, La., and first entered the fertilizer business in 1900 as superintendent, fertilizer plant, American Cotton Oil Co. In 1924 he organized and became president of Pick Fertilizer Service, and continued in that capacity when in 1927 the organization became the Davison-Pick Fertilizers, Inc.

Du Pont Cellophane Co. purchases Capes-Viscose, Inc.

New Incorporations

Arrow Chemical Products Corp., New York. 20,000 shs. com. M. M. Kreindler, 1133 Broadway, New York City, N. Y.

Industrial Lacquer Corp., Newark, chemists. $10,000 pf. 150 shs. com. H. A. Miller, Newark, N. J.

Kemozone, Inc., Wilmington, chemicals. 30,000 shs. com. American Guaranty & Trust Co.

Coco Cola Bottling Works (Thomas), Inc., Wilmington, drugs, extracts, chemicals, coco cola. 3,000 shs. com. Corp. Trust Co. of Amer., Wilmington.

William P. Young & Son, Inc., Pottstown, Pa., chemical products. $100,000. Corp. Service Co., Wilmington.

Chromium Process Company of America, Brooklyn, ores, any ferrous or non-ferrous metals. 300,000 shs. com. Corporation Trust Company of America.

Rockwood Products Corporation of Buffalo, New York, minerals. $2,100,000. 150,000 shs. com. Corporation Service Company.

International Combustion Tar & Chemical Corp., New York, deal in tar and by-products of same. 5,000 shs. com. U. S. Corp. Company.

The Mulsappalt Co., Inc., Jersey City, manufacture chemical products. $100,000. Erwin, Erwin & Davidson, Jersey City.

Kentucky Silica Co., Inc., Wilmington, Delaware, silica sand. 1,000 shs. com. Corporation Trust Co. of America.

Nicofer Chemical Products Corp., Paterson, chemists, etc. $50,000. David J. Marks, New York City.

Alba Pharmacal Co., drugs, chemicals. 10,000 pfd. 100 shs. com. D Tonkel, 30 Delancey Street, Manhattan, N. Y.

Jayzon Pharmacal Co. $50,000. Petersen, Steiner & Kohan, 1133 Broadway, N. Y. City.

The Weed Exterminating Company, Ltd., Winnipeg, Man. 10,000 shares of no-par value, manufactures chemicals. Abraham Buhr, Bjorn Stefaness, William J. Wilson.

Roland Fireproof Celluloid Corp. $10,000. M. Wilen, Flushing, L. I.

Carl Schmid, Montgomery, chemicals. $25,000. Watts, Oakes & Bright, Middletown.

Register Remedies Co., Inc., Wilmington, chemicals. $500,000. Corporation Service Co.

Passivation Products Co., Wilmington, chemicals. 500 shs. com. Corp. Trust Co. of America.

Kalolin Laboratories, chemicals. N. E. Panhorst, 30 E. 42nd St., N. Y. C. $20,000.

Van Ameringen, synthetic chemicals. H. H. Fallon, 27 Cedar St., N. Y. C. $100,000 pf. 2,000 shs. com.

U. S. Disinfecting Co. A. M. Muhlberg, 11 W. 42nd St., N. Y. C. $1,000.

Diamond Alkali Co., Wilmington, clays, stones, salts, coal. Corp. Trust Co. of America. $18,500,000.

Asbestos Products, Jersey City, asbestos. Registrar and Transfer Co. 150,000 shs. com.

Schering Corp., chemicals, drugs. Curtis, Mallet Provost Colt & Moser, 30 Broad St. 50,000.

La Palma Vegetable Oil Corp. Durham, Blake, Demillan & Connell, 2 Rector St. 6,000 shs. com.

Burnot Fire Proofing Products, Inc., New York, chemicals, dyes, paints. Corp. Trust Co. of America. 45,000 shs. com.

Newry Hill Developing Co., New York, ores, metals, minerals, Arley B. Magee, Inc., Dover, Del. $1,000,000 shs. com.

Dr. Charles James, head of chemistry department, University of New Hampshire, dies December 11. He was an authority on rare earths and metals, recipient of the Ramsay and Nichols medals, member of the American Chemical Society, the London Chemical Society and the Auro Boris Club.

William George Blagden, for fifty years one of the leaders of the British chemical industry, dies November 17, aged 89. His commercial activities began in 1862 and he was one of the first producers of benzol in England.

Ellsworth E. Iliff, president, Iliff-Bruff Chemical Co., Hoopeston, Ill., dies November 29, aged 57.

Ralph Barker, president, Barker Chemical Co., Savannah, Ga., and managing director, Dunnellon Phosphate Co., Rockwell, Fla., dies December 10, aged 71.

Lady Alexander, wife of Sir William Alexander, president, American-British Chemical Supplies, Inc., dies unexpectedly in London, December 4.

James W. Knox, founder, Lyman, Knox Co., Ltd., chemical manufacturer and dealer, Montreal, dies December 7, aged 82.

William M. Martin, New York, division sales manager, Armour Fertilizer Works, dies November 21, aged 55.

William T. Cashman, general counsel, Grasselli Chemical Co., dies December 24, aged 56.

Wynn Teegin, business manager, 303 Chemical Co., Ltd., Toronto, dies December 9.

The Financial Markets

Hooker Electrochemical Co. Offers $1,500,000 First Mortgage Bonds

Public financing is part of authorized issue of $5,000,000 —Proceeds to be used to provide funds for completion of new Tacoma plant—International Combustion Engineering Corp. Increases Holdings in British Co.

Hooker Electrochemical Co., New York, makes public offering of $1,500,000 first mortgage twenty-five-year six per cent. sinking fund bonds, Series "B". The bonds, which are due December 1, 1953, are priced at 99½ and accrued interest to yield over six per cent. They are part of an authorized issue of $5,000,000, of which $986,000 Series "A" are outstanding, the balance of which may be issued from time to time under the provisions of the indenture.

Hooker Electrochemical Co., was organized under New York State laws in 1903. Earnings available for interest and Federal income taxes for the past three years ended November 30, 1927, and eleven months to October 31, 1928, have averaged annually $626,101, or more than 3¾ times interest requirements on the company's total funded debt to be outstanding, less bonds held in the treasury.

The bonds are secured by a direct first mortgage on all of the real properties and fixed assets now owned by the company, with the exception of its office building in New York, upon which the first mortgage bonds will be a second lien subject only to a purchase money mortgage of $200,000. They are issued to provide the necessary funds for the completion of the company's new plant at Tacoma, Wash., and reimburse it for expenditures in connection with new property purchased and for additions and improvements. Company plans to begin operations this month in this new 30-ton electrolytic unit which has been constructed at Tacoma, Washington, and which will be an important branch of its Niagara Falls plant. The new plant will supply caustic soda in all its various forms, including flake, ground, liquid and solid, as well as chlorine, to the growing industries of the West and Northwest. There is a large potential market there for alkalies from the growing paper trade, as well as for bleaching, pulp making, and petroleum refining, according to officials of the company. The Northwestern industries have benefited for years from low water transportation rates on their raw materials, so freight rates will not be much lower under the short haul from the new plant.

International Combustion Increases Holdings in Coal Oil Extraction, Ltd.

International Combustion Engineering Corp., through the issuance of 40,000 shares of its own common stock, has acquired 30,000 ordinary shares of £1 each of Coal Oil Extraction Ltd.,

Coal Oil Extraction was incorporated in England in 1926 by International Combustion in accordance with an agreement with certain English interests associated with the company in developing its business in the British Empire. Under the agreement the English interests were entitled to subscribe to 30% of the capital of the company, or total of 45,000 shares out of total authorized capital of 150,000 shares of £1 each. International already controls 75,000 shares, including 60,000 shares allotted to a subsidiary in exchange for the low temperature distillation patents covering the McEwen-Runge and K. S. G. processes of low temperature distillation for the British Empire. International Combustion has since acquired 15,000 shares of the minority interest and has now decided to acquire the remaining minority interest of 30,000 shares of £1 each in exchange for 40,000 shares of its own common stock.

American Cyanamid Co., offers stockholders right to subscribe to one share of additional Class B common stock at $20 a share for each two shares of Class A or Class B stock now held. Rights will accrue to stockholders of record January 10, will expire February 4, and will be worth $10 on basis of present price of common of 50. Special meeting of stockholders has been called for January 3 to approve the financing.

There are now outstanding 494,572 common shares which will be increased to 741,858 by the sale of 247,286 shares of new stock to stockholders. Proceeds will be nearly $5,000,000. On July 16, 164,857 shares of new stock were offered to stockholders at $20 increasing the shares outstanding from 329,715 to 494,572.

Liquid Carbonic Buys Into Dry Ice

Directors of the Liquid Carbonic Corp. approve purchase of a substantial block of stock in the Dry Ice Corp. of America. The funds realized will be used by Dry Ice Corp. for development.

Liquid Carbonic directors have authorized a ten-year contract with the Dry Ice Corp. for the sale to it of carbon dioxide. The Dry Ice Corp. proposes to build plants connected with the sixteen branches of the Liquid Carbonic Corp. as rapidly as the market develops.

To carry out its plans the Liquid Carbonic Corp. has authorized an increase in capital shares from 200,000 to 400,000. The directors have approved the sale of 30,000 shares to bankers at $90. A special stock dividend of 20 per cent. has been declared.

Monsanto Chemical Co. increases capital stock from 110,000 shares no par to 160,000 shares no par. Of additional shares, 15,715 are to be offered to stockholders at $50 per share. Directors are authorized to dispose of remaining shares at such time and such price as they may determine, but not less than $50. Proceeds from present sale are to reimburse company for cash payment on acquisition of the Graesser interest in Graesser Monsanto Chemical Works, North Wales.

Report of Glidden Co. and subsidiaries for year ended October 31, 1928, shows net profit of $2,261,118 after depreciation and federal taxes, equivalent after dividends on 7% prior preference stock to $4.34 a share on 408,333 average number of no-par common shares outstanding during the year and to $3.54 a share on 500,000 common shares outstanding at end of the period. This compares with net profit of $1,712,438 or $3.03 a share on 400,000 common shares outstanding in preceding year.

An important Anglo-German cellulose company has been registered in Finland under the title of Waldhof, Ltd. Half of the capital is British, and it is understood that the company has had a British loan of £500,000.

Allied Chemical & Dye Corp. declares regular quarterly dividend of $1.50 on common, payable February 1 to stock of record January 11.

Merck & Co. declares regular quarterly dividend of $1 on preferred, payable January 2 to stock of record December 17.

Combined Reports of 14 Chemical Companies Show 39% Increase in Net

Last published financial reports of fourteen chemical companies show combined, an increase in net profits of 39.17 per cent. as compared with the corresponding periods in the previous year. In but one of the fourteen is a decline noted and while all others show a good percentage of increase, perhaps the most startling comparison is in the fertilizer group, where profits are shown in place of the deficits of the previous report. Comparisons are as follows:

	1928	1927
Air Reduction Co., 9 months, Sept. 30	$2,528,166	$2,004,211
Columbian Carbon, 9 months, Sept. 30	2,105,851	1,511,991
Commercial Solvents Corp., 9 months Sept. 30	2,099,774	1,651,503
E. I. du Pont de Nemours, 9 months, Sept. 30	52,278,679	36,322,765
Hercules Powder Co., 9 mon., Sept. 30	2,820,112	2,376,366
Mathieson Alkali Works, 9 mon., Sept. 30	1,560,020	1,378,362
National Distillers Products, 9 months, Sept. 30	311,218	174,707
Texas Gulf Sulphur, 9 months, Sept. 30	10,355,819	9,053,097
Freeport, Texas, 9 months, Aug. 31	1,952,393	2,702,315
Amer. Agric. Chem., year, June 30	2,237,650	*1,924,134
Amer. Cyanamid, year, June 30	1,547,590	1,285,323
International Agric., year, June 30	1,446,605	*352,315
Va. Car. Chem. Corp., year, June 30	2,510,702	*219,853
	$103,383,062	$73,637,144

Percentage of increase, 39.17 per cent. *Indicates deficit.

Royal Baking Powder Co. declares a quarterly dividend of 25 cents on the new no par common stock and the regular quarterly dividend of $1.50 on the preferred, both payable December 31 to stock of record December 15. The dividend on the common is equivalent to the $2 quarterly dividend paid on the old common stock prior to the eight-for-one split-up.

For six months ended June 30, 1928, net profit of Royal Baking Powder Co. and subsidiaries was $725,769 after depreciation, federal taxes, etc.

For year ended December 31, 1927, net profit was $1,487,431 after depreciation, federal taxes, etc., comparing with $1,885,282 in 1927.

Stockholders of E. I. du Pont de Nemours & Co., approve proposed split-up of common stock on basis of 3½-1. This action involves increase in authorized common stock from 5,000,000 shares no par to 15,000,000 shares of $20 par value. Under proposed plan, 3½ shares of the $20 par stock will be exchanged for each of the 2,811,050 shares of no par common outstanding, including new stock to be issued to Grasselli Chemical Co.

Newport Co. calls the outstanding cumulative prior common stock for redemption April 15 at the callable price of $125, plus accumulated unpaid dividends of $44 a share. On surrender of stock certificates prior to January 5, payment was made at rate of $172 a share, which includes regular and extra dividends aggregating $3 payable to stock of record January 5. Issue of 130,000 class A convertible stock was recently offered at $50 a share.

U. S. Industrial Alcohol Co. declares a quarterly dividend of $1.50 on the common and the regular quarterly dividend of $1.75 on the preferred. Common dividend is payable February 1 to stock of record January 15 and preferred payable January 15 to stock of record January 7.

Quarterly dividend of $1.50 on common places that stock on annual basis of $6, compared with former $5 annually.

American Cyanamid Co. declares quarterly dividend of $1.50 on the preferred, 1½ per cent. on the common, and an extra dividend of ½ per cent on the common, to be paid January 2, to holders of record December 15. This amounts to 40 cents per share on "A" common and "B" common stocks, $20 par.

A new international chemical holding concern, capitalized at 20,000,000 francs, is incorporated in Schaffhausen, Switzerland, under the name of Chemie Trust, A. G.

Air Reduction Co. declares regular quarterly dividend of 50 cents, payable January 15 to stock of record December 31.

Amer. Smelting Splits Common 3 For 1

Stockholders of American Smelting & Refining Co. approve three-for-one split-up in the common stock and creation of $20,000,000 new 6% cumulative second preferred stock. There will be authorized 4,000,000 shares of no-par common stock, of which 1,829,940 shares will be issued in exchange for the 609,980 shares of $100 par common now outstanding.

For eleven months ended November 30 net profit of company amounted to $3,608,928, as contrasted with $2,699,935 in the 1927 period. After allowing for the seven per cent. preferred dividends this is equal to $5.82 a share on the common stock, as compared with $3.24 a share a year ago. The regular dividend of 87½ cents a share was declared on the common and preferred stocks.

Stockholders of American Glanzstoff Corp. approve increasing the capital by an issue of 150,000 common B shares, to be offered to common stockholders of record December 29 at $60, in ratio of one common B share to every two common shares held. Rights expire January 31.

Proceeds will be used to double the capacity of the present plant through erection of second unit at Elizabethton, Tenn.

Corporation's capitalization now comprises $7,000,000 cumulative 7% preferred, 300,000 common shares and 150,000 common B shares.

Ansco Products, Inc., predecessor of Agfa Ansco Corp., has been formally dissolved. The latter corporation was formed last March, through a merger of Ansco Products, Inc., of Binghamton, with Agfa Products, Inc., and Agfa Raw Film Corp., both of New York City.

Stockholders of the old Ansco Photoproducts, Inc., received $2,250,000 the amount of stock subscribed, together with 120,000, shares of Agfa Ansco Corp., in return for the business, good will and plant of Ansco Photoproducts, Inc.

Certain-teed Products Corp. passes the quarterly dividend of $1 on the common due at this time. Regular quarterly dividend of $1.75 on the preferred was declared, payable January 1 to stock of record December 18.

Statement issued by the company said: "It is understood that there is little improvement in competitive conditions and that with unsatisfactory profits for the year to date, directors deemed it for the best interest of stockholders to omit the common dividend."

National Gypsum Co. offers holders of Class A and Class B common stock of record December 27 the right to subscribe to one share of Class A stock for every two shares of Class A and B held at $10 a share. Rights expire January 15, when first payment of $5 a share is due, the remaining $5 being due March 15.

Reverberations from Lord Melchett's recent visit to our shores are felt in the exchange of stock between Mond Nickel and International Nickel of Canada; the exchange between International Nickel of Canada and International Nickel of New Jersey; and the organization of Nickel Holdings Corp.

Freeport Texas Co. declares the regular quarterly dividend of $1, payable February 1 to stock of record January 15. Three months ago an extra dividend of 25 cents was paid and in the three quarters previous to that, extra dividends of 75 cents were disbursed.

Canadian Industrial Alcohol declares extra dividend of 25 cents and regular quarterly dividend of 38 cents on common, both payable January 15 to stock of record December 31. A. Kelly Fisher Wilmere and Colonel F. M. Gaudet are elected vice presidents.

Will & Baumer Candle Co. declares the regular quarterly dividend of $2 on the preferred, payable January 2 to stock of record December 20.

The Industry's Stocks

1928 Dec. 31 Bid	1928 Dec. 31 Asked	1928 High	1928 Low	1927 High	1927 Low	Sales In Dec.	Sales Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	Earnings $-per share-$ 1926
								NEW YORK STOCK EXCHANGE					
98	98¼	99¾	59	199½	134½	94,800	652,100	Air Reduction	No	223,445	$5.00	9 mo. 12.63	10.83
49	251	252½	146	169½	131	87,100	2,100,800	Allied Chem. & Dye	No	2,178,109	6.00	10.02	9.79
				124	120			7% pfd	100	392,849	6.00		61.28
21½	21¾	26	15¾	21¼	8¼	33,900	424,500	Am. Agricultural Chem	100	333,221	2.00	Nil	...
70½	72	79½	55¾	72¾	28½	22,700	446,200	pfd	100	284,552	1.50		3.59
110½	110½	117½	70¼	77¼	43¾	779,800	11,579,700	American Can	25	2,473,918	2.00	4.11	4.38
141½	148	147	136½	141½	126	2,600	43,200	pfd	100	412,333	7.00	31.66	33.31
165	187	192	56¾	72½	20½	400	2,020,600	American Linseed	100	167,500	...		...
170	....	182	86½	92½	46¾	339	87,789	pfd	100	167,500	7.00	7 mo. 6.00	.62
....	....	63¾	39	49¾	36½	738,000	635,500	American Metal Ltd	No	594,278	4.00	9 mo. 3.64	3.88
....	....	117½	109	113½	108	17,000	19,800	pfd	100	50,000	7.00	9 mo. 50.27	53.15
291½	292½	293	169	188¾	132¾	61,200	2,780,200	Amer. Smelt and Refin	100	609,980	7.50	6 mo. 19.64	23.38
137	138½	142	131	133	119½	3,200	57,400	pfd	100	500,000	7.00	6 mo. 17.01	35.52
42¾	43¼	57	6¾	10½	5¾	127,000	1,533,800	Amer. Zinc & Lead	25	193,120	...	9 mo. Nil	...
		117¾	40	51½	**35**			pfd	25	96,560	...	9 mo. 2.31	...
119¾	119¾	120½	53¾	60¼	41½	2,355,700	12,231,500	Anaconda Copper Mining	50	3,000,000	3.00		4.74
102	103	112¾	55½	63	38	47,500	533,500	Archer Dan. Mid	No	200,000	...	5.76	6.35
				112¾	106			pfd	100	43,000	7.00	37.31	35.23
112½	113	114	63	70	56½	57,000	112,700	Atlas Powder Co	No	260,393	4.00	5.75	7.04
106	106½	110½	102	107	98	250	5,110	pfd	100	90,000	6.00	5 mo. 22.71	26.46
116	117½	66½	50	131¾	104	875,000	1,769,200	Atlantic Refining	100	500,000	...	9 mo. Nil	11.24
8¾	9	12½	4½	5½	3½	84,800	1,102,900	Butte Copper & Zinc	5	600,000	.50	9 mo. 0.09	.32
10½	10½	16¾	8¼	11¼	7¾	15,900	551,800	Butte Superior Mng	10	290,197	2.00	9 mo. 0.23	1.71
116½	117	122	65	92½	66	18,700	162,000	By Prod. Coke	No	189,931	3.00	9 mo. 4.84	6.00
3	3½	5¾	1¾	2¾	1¼	31,900	724,500	Calla Lead & Zinc	10	723,355	...	9 mo. 0.08	...
46¾	47	47¾	20½	24¾	14½	170,700	2,296,600	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
28½	28½	119	61½	55¾	42	62,400	1,044,900	Certainteed Prod	No	307,000	4.00	9 mo. 6.07	6.02
80	82	63½	23½	118¾	106	700	7,500	7% pfd	100	43,000	7.00	9 mo. 56.80	54.30
....	....	74¾	37¾	44¾	33½	414,300	2,834,600	Chile Copper	25	4,435,595	2.50	6 mo. 0.62	2.65
134	134¾	134¾	79	101½	66½	109,400	376,100	Columb Carbon	No	204,131	4.00	9.41	6.51
239	239¼	250½	137½	203	145	37,700	710,000	Commercial Solvents	No	108,861	4.00	9 mo. 9.24	14.13
12½	62¾	64½	53	86¾	58¾	147,700	213,700	Cont. Can	No	620,000	6.00	7 mo. 7.54	6.36
124¾	126	128	123	126	120	130	2,500	pfd	100	52,930	7.00	7 mo. 86.82	70.55
90	90¼	94	64¾	68	46¼	100,700	2,312,000	Corn Products	25	2,530,000	2.00	9 mo. 4.01	4.03
143	144½	146½	138½	142½	128	760	19,820	pfd	100	250,000	7.00	9 mo. 47.62	47.73
59½	59¾	68¾	34¾	48½	26½	932,000	1,975,100	Davison Chem	No	310,000	...		...
55	57	61	40	42¾	36¾	15,200	316,000	Devoe & Rayn A	No	95,000	2.40	(†) 5.47	5.22
112	114½	120	108	114½	101	150	4,390	1st pfd	100	18,096	7.00	6 mo. 53.23	49.70
117	117½	121½	114	118	105½	1,400	5,900	Dupont deb	100	795,212	6.00	9 mo. 57.04	52.51
500	502	503	310	343¾	168	14,900	597,100	Dupont de Nemours	No	2,661,658	9.50	15.45	13.98
182½	184	194½	163	175½	126¼	17,600	378,600	Eastman Kodak	No	2,055,340	5.00		9.50
126	130	132½	123½	131½	119½	30	2,310	pfd	100	61,657	6.00		322.11
220	250	230	120	97	75½	1,600	17,200	Fed. Mining & Smelting	100	50,400	...	23.36	35.95
83½	83¾	89¾	65	71½	46½	210,700	3,777,800	Fleischmann	No	4,500,000	3.00	4.30	4.08
49½	49½	109¾	43	106½	34	165,000	3,602,000	Freeport Texas	No	729,733	4.00	9 mo. 5.24	2.48
74½	75	94¾	141½	96¾	65	60,900	2,468,000	General Asphalt	100	243,550	...	6 mo. 5.00	8.11
113½	117½	150	132	144¾	107½	2,400	62,900	pfd	100	68,742	5.00	6 mo. 4.20	27.58
36½	37	37	20¾			159,800	1,565,000	Glidden, com	...	...	...		...
103¼	104	105	95			360	18,560	prior pfd	...	...	...		...
142¾	142¾	143½	71	78¾	42	773,200	4,724,800	Gold Dust	No	318,586	...	6.20	3.01
....	....	84	64½	70¾	43½	....	.....	Household Prod	No	575,000	3.50	6 mo. 5.22	5.22
15½	15¾	20¾	13	16¾	6¾	17,800	336,200	Intern. Agri	No	441,695	...	Nil	1.60
84¾	85	85	48¾	65	33	6,300	120,300	pfd	100	100,000	...	Nil	14.06
....	....	46	41½	89½	38½	135,900	257,000	Intern. Nickel	25	1,673,374	2.00	9 mo. 2.26	3.00
....	....	....	....	110	103¾	137,400	3,974	ctfs	100	89,126	6.00	9 mo. 46.94	62.35
59	60	60	47¾			22,300	87,700	Int. Print Ink	...	...	...		...
		69	49¾	75	63			Intern. Salt	100	60,771	6.00	6 mo. 2.64	8.35
198¾	199	202	96½			298,500	2,116,300	Johns-Mansville	No	750,000		4.69	4.34
106½	107½	124½	63½	78¼	45	109,000	1,210,100	Liquid Carbonic Corp	No	125,000	3.60	5.90	11.34
47	48¾	57½	45	58¼	43	6,100	62,900	Mac and Forbes	No	376,748	2.00	9 mo. 2.36	3.30
182	184	190	117¾	132½	82	7,900	468,600	Matheison Alk	No	147,207	6.00	9 mo. 11.27	9.88
123	124	130	115	120	103	220	1,850	pfd	100	24,750	7.00	9 mo. 74.06	67.85
32¾	32¾	33	17¾	17¾	20¼	79,200	842,000	Miami Copper	5	747,114	1.50		1.52
37½	38	58½	29¾	56¾	17	36,400	810,800	National Dist. Prod	No	167,651	...	9 mo. 0.54	...
52½	53	71¾	51½	69¾	43	1,700	50,100	pfd	No	109,795	...	9 mo. 1.62	...
....	....	....	....	....	....	6,600	....	pfd. tem. ctfs	....	....	....		
129½	132	136	115	202¾	95	9,600	101,800	National Lead	100	206,554	8.00	10.25	35.33
38½	39	41½	22¾	27½	19½	25,300	724,700	Penick & Ford	No	433,773	...	9 mo. 2.04	1.37
210	215	217	157	168¾	126	4,500	259,500	Peoples Gas Chi	100	60,000	8.00	11.15	11.04
69	69½	71¼	37	43¼	36	1,684,000	662,200	St. Joseph Lead	10	1,951,517	2.50	1.85	4.21
54¾	54¾	59¾	37¾	41¼	35½	541,500	5,495,400	Standard Oil Co of N. J	25	24,262,532	1.00		5.01
45¾	45¾	45½	28¾	34½	29¾	1,701,100	7,819,600	Standard Oil Co. of N. Y	25	17,023,928	1.60	0.90	1.94
19	19½	19¾	10½	13½	8¼	135,400	1,100,400	Tenn. Cop. & Chem	No	794,624	1.00		1.31
79¼	79½	82½	62¼	81¾	49	405,400	6,529,200	Texas Gulf Sulfur	No	2,540,000	4.00	4.76	3.69
196	197	209	186½	154½	98¼	264,200	3,384,600	Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
131	131¾	138	102½	111¾	69	99,600	819,300	U. S. Ind. Alc	100	240,000	5.00	6.00	7.04
125¾	127	125¾	118¾	121	107½	510	6,979	pfd	100	60,000	7.00		35.16
98	100	111½	60			157,500	3,567,300	Vanadium Corp					
18½	19	20½	12			60,200	526,200	Virginia-Car., com					
60	60½	64½	44¾	48¾	26½	13,000	243,800	6% pfd	100	213,350	...		6.73
94½	95	99½	88½	91	73	1,100	31,900	7% pfd	100	142,910	7.00		17.54
High	**Low**							NEW YORK CURB					
20	19½	31½	16½	31¾	30	9,700	190,200	Acetol Prod	No	60,000			
74¼	73¾	42¾	33½			1,200	25,500	Agfa Ansco					
152	151	197½	120	145½	67¼	9,000	157,400	Aluminum Co. of America	No	1,427,625	...	4.02	...
104½	104½	110½	104	43½	25	1,700	53,900	pfd	20	263,772	1.20	3.09	3.49
83½	81	87¾	74			10,500	....	Amer. Com. Alc					
65	63	65	30¾			99,800	14,400	Amer. Cyan					
17	15¾	24	13	18½	3½	4,900	531,100	Amer. Rayon Prod	No	110,000	1.00		Nil
27½	26½	28½	11¾			16,100	205,800	Amer. Sol. & Chem. com					
47½	45½	47¾	25¾	29	11	3,000	233,400	pfd	No	160,000	...		Nil
30	29	54	26½	31½	14	4,800	255,300	Anglo Chile Nitrate	No	1,756,750	...	Loss	Loss
9	8¾	33¾	7			27,100	452,500	Br. Celanese					
....	....	46½	41	43½	22	300	1,200	Canad. Ind. Alc	No	800,000	1.28	2.49	2.63
170	170	226	156	...	...	215	6,340	Casein Co					
59	52	103	36½	117	44	38,400	328,600	Celanese Corp of Am	No	1,000,000	...	1.91	1.80
59	40	122	34	129¾	60	7,100	34,300	Celluloid Co	100	70,980	...		...
105½	103½	132	103½	133¾	113¾	400	3,700	1st pfd	100	24,551	...		...
75	75	97½	75			300	8,050	7% pfd					
68	61½	73¾	49	91	84	6,300	460,500	Celotex pfd	No	164,730	3.00		5.06
80½	77	92	75			9,800	545,000	Colgate-Palmolive Peet					
....	....	....	....	38½	24¾	1,100	65,320	Courtaulds	£1	12,000,000	16¼%		18.18
21½	20¾	24¾	20			2,600	42,700	Am. dep- rects					

1928 Dec. 31 High	Low	1928 High	Low	1927 High	Low	Sales In Dec.	Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	1926
....	....	380	192	202	180	300	1,840	Hercules Powder	100	147,000	16.37	9 mo. 16.37	18.18
120½	120½	125	118½	121	114		1,900	pfd	100	111,392	7.00	28.04	30.82
21	21	23	7½	10	7½	1,600	19,700	Heyden Chem	10	150,000	...		0.32
92	92	98	38½	39	37½	400	13,550	Monsanto Chem	No	110,000	2.50	6.11	5.60
....	....	....	....	105½	84	....	....	Penn Salt	50	150,000	5.00	8.09	6.08
7½	7½	9¾	6½	14½	8	2,000	20,200	Pyrene Mfg	10	223,158	2%	6.42	2.38
49¾	40¾	....	....			160,700	210,435	Royal Baking, new com					
....	....	111½	103	110	100	550	2,950	pfd					
....	....	92	65½	68½	44	325	3,500	Sherwin Williams	25	594,445	3.00	6.42	5.59
24½	21¾	29	17	20½	13½	6,200	140,300	Silica Gel	No	600,000	...		...
....	....	9¾	6½	12	5	.....	5,500	Snia Viscosa	150 lire	6,666,666⅔	.72		6.86
....	....	10	5¾			100	12,500	dep. recpts					
40½	38½	42	31½			14,900	81,700	Spencer Kellogg					
140	135	150½	125	130	115½	9,000	70,750	Swift & Co	100	1,500,000	8.00	8.13	10.43
539	526	630	450	499	145	3,980	56,480	Tubize "B"	No	78,868	...		...
....	....	100	53¾	110¾	82½	2,100	69,950	U. S. Gypsum	20	687,875	8%	10.10	11.35
								CLEVELAND					
130	130	147½	104	115	74½	533	958	Cleve-Cliff Iron	No	400,000	4.00		
205	205	225	112½	108	70	53	483	Dow Chem	No	120,000	6.00		...
107	107	107	103¾	106½	100	60	80	pfd	100	30,000	7.00		...
....	....	....	....	21¾	15½	2,000	2,000	Glidden	No	400,000	2.00	3.03	3.41
103½	103½	104¾	96	100	84	249	249	prior pfd	100	71,922	7.00	6 mo. 23.91	25.98
....	....	95	65½	70	44	...	...	Sherwin Williams	25	594,445	3.00	6.42	5.59
....	....	109½	106	109	104	...	...	pfd	100	125,000	6.00		...
28	28	28	24¾	...	...	1,605	4,670	Wood Chemical Prod. "A"	No	20,000	2.00		...
								CHICAGO					
67	65	73	49	86	53	1,800	...	Celotex	No	170,456	3.00	3.31	
87	87	92	80	92	82	150	...	pfd	100	52,534	7.00		
96	94	96	91½	39	37	2,950	...	Monsanto Chem	No	110,000	2.50	6.11	
141	139	146	127½	130	115½	10,750	...	Swift & Co	100	1,500,000	8.00	8.13	10.43
68	66	100	55	110¾	82	19,641	...	U. S. Gypsum	20	687,875	8%	10.10	11.35
								CINCINNATI					
....	....	....	.....	125¾	113½	10	406	Fleishmann pfd	100	12,295	6.00	1,589.49	1,501.80
283	282	300	249	250	177	2,112	27,938	Proc. & Gam	20	1,250,000	4.75		9.17
								PHILADELPHIA					
98¼	98	109½	92	105½	74½	900	24,090	Penn. Salt	50	150,000	5.00	8.09	6.08
167	165	173½	114½	118½	89½	127,081	1,881,284	United Gas Imp	50	2,130,088	...		4.59
								MONTREAL					
17	17	....	....	39½	20	...	....	Asbestos Corp	No	200,000	1.50		1.02
70	70	.	....	98	82½	...	....	pfd	100	74,561	7.00		
41	40½	....	....	43½	21½	...	....	Canada. Ind. Alc	No	(d)800,000	1.28	2.49	2.63
86½	86½	...	...	*277½	67	...	....	Shawinigan W. & P	No	1,100,000	2.00	2.63	
								BALTIMORE					
24	24	28¾	17	20½	15	255	30,313	Silica Gel	No	600,000	...		...
								UNLISTED					
73	71	80	70	...	...	...	...	Agfa Ansco, pfd	...	...	...		...
375	360	375	190	...	...	...	...	Hercules Powd., com	...	...	...		...
73	64	82	64	...	...	...	...	Merck. & Co., pfd	...	...	...		...
167	167	169	116	...	...	...	...	Newport	...	...	...		...

The Industry's Bonds

1928 Dec. 31 High	Low	1928 High	Low	1927 High	Low	Sales In Dec.	Since Jan. 1, 1928	ISSUE	Date Due	Int. %	Int. Period	Orig. (1) Offering $
								NEW YORK STOCK EXCHANGE				
105	104	106¾	104	105	99	68	2,267	Am. Agri Chem	1941	7½	F. A.	30,000
95½	94	97	92			46	647	Amer. Cyanid				
101¼	101	102¾	99½	103½	100½	231	3,620	Am. Smelt & Refin "A" 5%	1947	5	A. O.	...
95	94½	105½	92	97	87	145	5,780	Anglo Chilean	1945	7	M. N.	16,500
101¼	101	103¾	99¼	103½	100½	43	1,232	Atlantic Refin	1937	5	J. J.	15,000
101½	101½	103½	100	102¼	100¼	10	275	By product Coke	1945	5½	M. N.	8,000
103¾	103¾	103¾	100	104¼	101½	4	148	Corn Product Refin	1934	5	M. N.	10,000
107½	107½	117	106	111½	106	37	1,783	General Asphalt	1939	6	A. O.	5,000
92½	92½	95¾	89½	91¾	81¾	1	144	Int. Agric. Corp	1932	5	M. N.	30,000
82	81	86½	77	...	...	17	258	Int. Agri. Corp. stamped, extended	1942	5	M. N.	7,020
177	177	205	113	133½	104	26	3,914	Liq. Carbonic Corp	1941	6	F. A.	5,000
116½	115½	....	...	102	98½	187	7,086	Montecatini	1937	7		
94	93¼	....	...	95¼	92¼	367	2,800	Ex War	1937	7		
112½	112½	....	...	115	113½	13	66	People's Gas & Coke	1943	6	A. O.	10,000
105	104⅜	108⅜	102	105½	101¼	16	1,120	Refunding	1947	5	M. S.	40,000
102½	102	104	102	104½	101½	354	6,893	Standard Oil N. J	1946	5	F. A.	120,000
111	110½	120	101½	101½	98½	287	1,465	Tenn. Cop. and Chem	1941	6	A. O.	3,000
82	82	91½	82	95½	91	2	93	Va. Iron C. & C				
								NEW YORK CURB				
102	101¼	103½	100	105¼	105	214	4,228	Alum. Co. of Am 52	1952			
118⅛	117½	121½	98			164	2,316	Amer. Com. Alc				
115	114	125	99			107	1,293	Amer. Solv. & Chem				
99⅛	99⅛	101⅞	99⅛	102½	101½	106	1,404	Anaconda Cop	1929	6	J. J.	25,000
99	98¾	101½	97½	99½	95½	256	3,714	Koppers Gas and Coke	1947	5	J. D.	25,000
101	100	103½	98	103	98	210	264	Natl. Dist. Prod	1935	6½	J. D. 15	3,500
94½	93¾	98⅞	93½	98	95½	323	4,998	Shawinigan W & P	1967	4½		
102	100½	106⅛	100	100½	100	22	114	Silica Gel. 6½% with warr	1952	6½		
98	97½	100	95	99⅛	96	45	1,447	Solvay Am. Invest. Corp	1942	5	M. S.	15,000
100½	99½	101½	99⅛	100⅛	99	23	3,226	Swift & Co	1932	5	A. O.	50,000
104	102½	104	99½	103⅛	98½	31	519	Westvaco Chlorine Prod	1937	5½	M. S.	2,500

News Notes

"Over a Century of Service and Progress"

JANUARY, 1929

Formic Acid, 85 & 90%:

We are in an excellent position to supply this material from spot stocks which we maintain at all times, carloads to single carboys, inquiries respectfully solicited.

Borax & Boric Acid:

As distributors for producers we carry stocks not only at New York, but in our various branches. We are prepared to make quick deliveries, in Crystal, Granular and Powdered form. We also have the Technical as well as the U. S. P.

Barium Chloride:

The situation abroad is acute. Producers seem to be sold up for the months of January and February. Prices are high. The same situation seems to be prevalent with the American manufacturers. We feel that the prices during 1928 were not commensurate with the value of the goods as related to production costs, and with the increasing demand it will naturally follow that the price will be advanced.

Epsom Salts, Technical:

Supplies of raw materials abroad have been curtailed with a resultant slowing up in deliveries and shipments to this country have been somewhat delayed. We are pleased to say however, that in anticipation of Winter conditions we have ample stocks and numerous shipments afloat. Prices are firm with perhaps a slightly upward tendency.

Contracts:

We are gratified in noting the continual increasing business which is being placed over the year to come. A large percentage of our contracts have been signed, which is an indication of a greater feeling and confidence in good business for 1929.

The Trend of Prices

New Year Finds Both Industry And Trade in Active Condition

Chemical Industry Generally Has Had Good Year—Alkali Contract Season Closes Successfully—Another Alcohol Merger Marks Past Month—Tariff Hearings Feature Present Month.

As the chemical industry faces the new year, expressions of optimistic nature are heard on all sides. The prevailing impression gathered throughout the trade is that 1928 has been a very good year and that the outlook for 1929 is even better.

This is in line with opinion in the business and financial world in general as expressed in the trade and public press throughout the country, and also in line with the ideas of industrial leaders and experts everywhere.

According to Secretary of Commerce, William F. Whiting, "some of the more important economic forces which dominate the business situation as we enter the New Year are credit conditions, the degree of accumulation of merchandise stocks and of speculation in them, the size of the crops and of our current industrial output, the rate of wages and volume of employment, and the prospects of foreign trade.

"With respect to credit conditions 1928 has been an extraordinary year. The outflow of gold which began in the autumn of 1927 continued during the first half of 1928 and caused a reversal in the easy money situation that had prevailed for several years. Public attention has been fixed on the rise in the rates on stock-exchange 90-day time loans from 4¼ per cent. in January to 7½ per cent. in the early autumn and the even greater rise in call money rates. It is well, however, to note that bank credit for commercial purposes has been in ample supply at rates ranging from less than ½ per cent. higher in southern and western cities to slightly over one per cent. in New York City while open-market rates for commercial paper have increased by only 1½ per cent. during the year.

"Agricultural output during the past year was about five per cent. larger than in 1927 and there was an even greater expansion in manufacturing production, but neither stocks of raw materials nor of manufactured goods have shown any general tendency to accumulate. There is no considerable speculation in commodities and wholesale prices average about the same as a year ago.

"Wages continue at a high level and unemployment has been reduced to a minimum. "Activity in the automotive and construction industries has been sustained and is particularly noteworthy. Production of many related products, such as iron and steel, cement, gasoline, and rubber tires has been stimulated as a result of these developments. The textile and coal industries, however, still lag behind the others.

"Foreign, as well as domestic, demand for the products of our farms and factories is steadily expanding. During the past year there has been an exceptionally large growth of our exports of finished manufactures — especially automobiles, machinery, and petroleum products.

"In general it may be stated that both industry and trade are exceptionally active as we enter the New Year."

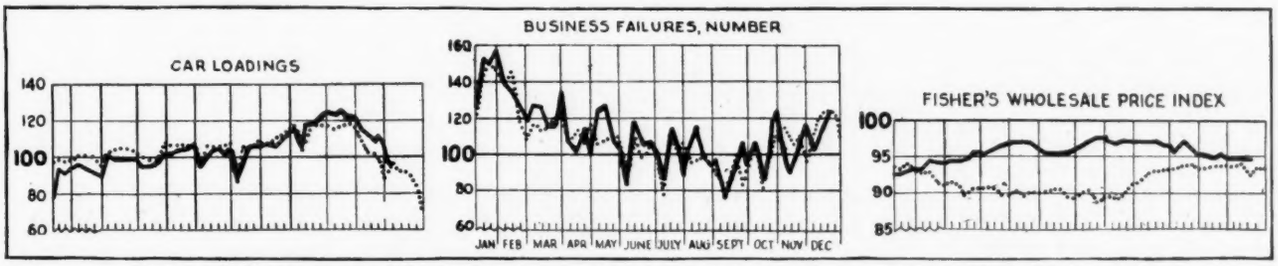
Another official communication has been made by Dr. Julius Klein, director, Bureau of Foreign and Domestic Commerce, Department of Commerce, who says in part that "the year 1928 closed with domestic business larger than ever before and foreign trade in exceptional volume, and there is every indication that the high levels of recent months will be carried into the New Year. Exports of merchandise were larger than in any year since 1920, exceeding five billion dolllars".

These two extracts, representing Government opinion on present-day trends in business and industry, crystallize the views of prevailing impressions throughout industrial America generally. As the chemical industry looks back over the year, it, too, may consider with satisfaction, the progress which has been made. A study of the financial statements of a number of chemical companies taken at random, illustrates clearly the fact that the industry generally is prospering as it never has before. Outstanding, perhaps, is the recovery made by the fertilizer branch of the industry during the past year.

As in other industries, the keynote of the past year in the chemical industry has been mergers and consolidations of interests. Another has been added to the list during the past month with the definite announcement of a new large alcohol producing organization formed by the merger of five formerly independent companies. Conditions in the alcohol market are now very favorable despite the fact that continued warm weather has somewhat retarded normal shipments of alcohol for anti-freeze purposes.

The contract season for the alkalis has practically closed, and despite an increasing tendency for hand-to-mouth buying among smaller consumers, booking for 1929 are reported to exceed those of the previous year. New and somewhat lower prices have been announced on butyl alcohol which is bound to effect many products closely allied to it. Domestic producers are making considerable progress against foreign competition in the ammonium chloride market and American production at present is filling the needs in the mercury market.

Without doubt, the most important feature of January to the industry will be the preliminary tariff hearings in Washington with a view towards a readjustment of the tariff. Elsewhere in these pages will be found complete discussion of the underlying factors which must be considered, especially as they affect the chemical and allied products. In certain groups of chemicals, the effects will probably be far-reaching in nature and it seems certain that the future of the industry will be tremendously influenced by this move towards tariff revision which begins this month.



Business indicators prepared by the Department of Commerce. The weekly average 1923-1925 inclusive = 100. The solid line represents 1928 and the dotted line 1927.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

Acetone — Conditions have apparently returned to normal and the market has remained firm and unchanged during the past month. Production which was increased materially in September, has been progressing in considerable volume since so that supply is once more normal. Exports, too, are now proceeding in their usual volume once more and the situation on every hand has eased off. Quotations remain at 15c lb.

Acid Acetic — Although acetate of lime is in much better supply, there are no indications as yet of anything except extreme firmness and steady prices in this market. It is true that supplies are easier, but the potential demand is so great that this acid will, in all likelihood, continue in strong position for some time to come. Even such additional production, from other methods than that of calcium acetate, as has thus far been projected has had no apparent effects upon the underlying tone of the market. It has, however, aided the supply to keep somewhat apace with the growth in demand.

Acid Citric — The shortage abroad has evidently been entirely relieved by this time. At any rate, there are no more inquiries for export in this market. On the other hand, there are no foreign supplies available here and prices are strictly nominal. Prices on domestic remain unchanged at 46c lb., for crystals in barrels. Production of calcium citrate and concentrated lemon juice in Sicily and Calabria from December 1, 1927 to June 10, 1928, has been estimated at 5,411 short tons, against 5,720 short tons during the corresponding period of the preceding year.

Acid Cresylic—Quotations on this material continue to cover a fairly wide range, thus, apparently, indicating that some lack of firmness still exists in the market, Although, disinfectant manufacturers and business in that trade in general is reported as having been better during the past month, there seem to be abundant stocks of the dark material. The pale grade is also subject to many regularities, and the market in general is not in very satisfactory condition. Reports from Britain indicate that the

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	.24	.24	.24	Acetaldehyde, drs lc-1 wks...lb.	.18½	.21	.26	.18½
.....	.20	.20	.20	Acetanilid, tech, 150 lb bbl....lb.	.23	.24	.24	.23
.....	.29	.29	.29	Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.29	.35	.35	.29
.....	.38	.32	.37	Acetin, tech drums.....lb.				
.02½	.12	.12	.12	Acetone, CP, 700 lb drums c-1 wks.....lb	.....	.15	.15	.13
1918	1.65	1.65	1.65	Acetone Oil, drs NY.....gal.	1.65	1.75	1.75	1.65
.....	.42	.42	.42	Acetyl Chloride, 100 lb cby...lb.	.42	45	.45	.42
				Acids				
1.50	3.38	3.38	3.38	Acid Acetic, 28% 400 lb bbls c-1 wks.....100 lb.	.....	3.88	3.88	3.38
.....	11.92	11.92	11.92	Glacial, bbl c-1 wk...100 lb	.....	13.68	13.68	11.92
.....	.98	.98	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	.00	.98
.....	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
1.00	1.60	1.25	1.38	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.23	.57	.57	.57	Benzoic, tech, 100 lb bbls...lb.	.57	.60	.60	.57
.07½	.08½	.08½	.08½	Boric, crys. powd, 250 lb bbls.....lb.	.08½	.11	.11	.08½
.....	1.25	1.25	1.25	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
1917	.85	.80	.84	Butyric, 100% basis cbys...lb.	.85	.90	.90	.85
1917	4.90	4.85	4.89	Camphoric.....lb.	.....	4.85	4.85	4.85
.....	.25	.25	.25	Carbolic, 10%, 50 gal bbls..lb.	.13	.14	.28	.13
.....	.15	.15	.15	Chlorosulfonic, 1500 lb drums wks.....lb.	.15	.16	.16	.15
1918	.37	.25	.29	Chromic, 99%, drs extra...lb.	.25	.30	.30	.25
.....	1 00	1.00	1.00	Chromotropic, 300 lb bbls..lb.	1.00	1.06	1.06	1.00
.53	.44½	.43	.43 3/16	Citric, USP, crystals, 230 lb bbls.....lb.	.46	.59	.44½	.59
.....	.95	.95	.95	Cleve's, 250 lb bbls.....lb.	.95	.97	.97	.95
1918	.60	.57	.61	Cresylic, 95%, dark drs NY.lb.	.70	.72	.70	.68
1918	.70	.60	.63½	97-99%, pale drs NY....lb.	.72	.77	.72	.72
1918	.11	.10	.10½	Formic, tech 85%, 140 lb cby.....lb.	.11	.12	.12	.11
1918	.50	.50	.50	Gallic, tech, bbls.....lb.	.50	.55	.55	.50
1918	.74	.69	.72	USP, bbls.....lb.	....	.74	.74	.74
.....	1.00	1.00	1.00	Gamma, 225 lb bbls wks...lb.	1.00	1.06	1.06	1.00
1918	.57	.57	.57	H, 225 lb bbls wks.....lb.	.57	.63	.63	.57
.....	.67	.65	.65½	Hydriodic,USP,10%soln cbylb.	...	.67	.67	.67
.....	.45	.45	.45	Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.48	.45
.....	.80	.80	.80	Hydrochloric, CP, see Acid Muriatic.....				
.03	.06	.06	.06	Hydrocyanic, cylinders wks lb.	.80	.90	.90	.80
.....	.11	.11	.11	Hydrofluoric, 30%, 400 lb bbls wks.....lb.	.....	.06	.06	.06
.....	.85	.85	.85	Hydrofluosilicic, 35%, 400 lb bbls wks.....lb.	.....	.11	.11	.11
.019	.05½	05½	.05½	Hypophosphorous, 30%, USP, demijohns.....lb.	.....	.85	.85	.85
.04	.13	.13	.13	Lactic,22%,dark,500 lb bbls lb.	.04½	.05½	.06	.04½
.....	.52	.52	.52	44%, light, 500 lb bbls ...lb.	.12	.12½	.13½	.12
.....	.60	.60	.60	Laurent's, 250 lb bbls.....lb.	.52	.54	.54	.52
1918	.07¼	.07¼	.07¼	Malic, powd., kegs.....lb	.48	.60	.60	.48
1918	.01	.01	.01	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
.....	.21	.18	.19½	Mixed Sulfuric-Nitric..... drs wks.....N unit	.07½	08	.08	.07½
.....	1.65	1.65	1.65	drs wks.....S unit	.01	.01½	.01½	.01
1.15	1.35	1.35	1.35	Monochloroacetic, tech bbl.lb.	.18	.21	.21	.18
1.30	1.70	1.70	1.70	Monosulfonic, F Delta bbls.lb.	.....	.65	.65	.65
.....	.95	.95	.95	Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	.....	1.40	1.40	1.35
1918	.55	.55	.55	20 degrees, cbys wks..100 lb.	1.70	1.80	1.80	1.70
3.37½	5.00	5.00	5.00	N & W, 250 lb bbls.....	.85	.95	.95	.85
4.50	6.00	6.00	6.00	Naphthionic, tech, 250 lb1	.55	.59	.59	.55
.07½	.11½	.11	.11	Nitric, 36 deg, 135 lb cbys c-wks.....100 lb.	.....	5.00	5.00	5.00
.036	.08	.07	.07½	40 deg, 135 lb cbys, c-1 wks.....100 lb.	.....	6.00	6.00	6.00
.23	.19	.16	.16½	Oxalic, 300 lb bbls wks NY..lb.	.11	.11½	.11½	.10½
1918	.50	.50	.50	Phosphoric 50%, 150 lb cby.lb.	.08	.08½	.08½	.08
.50	.45	.30	.41½	Syrupy, USP, 70 lb drs...lb	.....	.16	.16	.16
.....	.86	.86	.86	Picramic, 300 lb bbls.....lb	.....	.50	.50	.50
.22½	.27	.27	.27	Picric, kegs.....lb.	.40	.50	.50	.40
1918	.15	.15	.15	Pyrogallic, technical, 200 lb bbls.....lb.	.....	.86	.86	.86
1.00	1.60	1.60	1.60	Salicylic, tech, 125 lb bbl...lb.	.27	.32	.32	.27
1.00	1.20	1.20	1.20	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
.87½	1.10	1.10	1.10	Sulfuric, 66 deg, 180 lb cbys lc-1 wks.....100 lb.	1.60	1.95	1.95	1.60
1.25	1.50	1.50	1.50	1500 lb dr wks.....100 lb.	.....	1.37½	1.37½	1.20
.....	42.00	42.00	42.00	60°, 1500 lb dr wks..100 lb.	.....	1.12½	1.12½	1.12½
.55	.30	.30	.30	Oleum, 20%, 1500 lb drs lc-1 wks.....100 lb.	.....	1.52½	1.52½	1.52½
				40%, lc-1 wks net.....ton	.....	42.00	42.00	42.00
				Tannic, tech, 300 lb bbls...lb.	.30	.40	.40	.30

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

market there is steadily advancing, but price shading has continued to be the order of the day here.

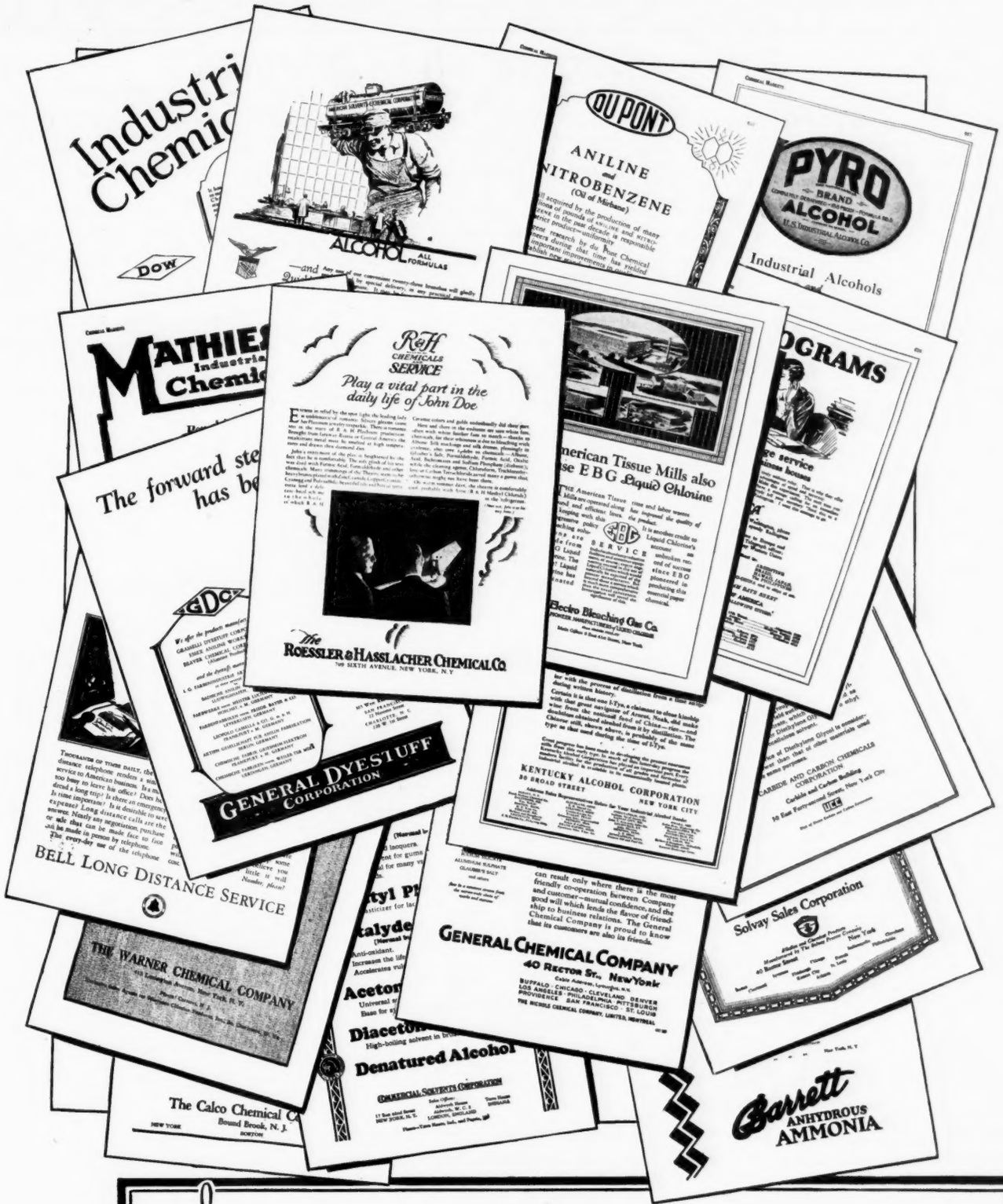
Acid Oxalic — General opinion places this material in excellent selling position. The market is very strong and, it is said that the past month has shortened stocks considerably. Demand has been good, and with stocks none too plentiful, the market undertones seem quite firm. The basic price of 11c lb. has not been changed, but smaller lots range to 11½c lb.

Acid Sulfuric — Demand continues apace and producers report that they are still experiencing some difficulty in meeting it. All grades have been firm during the past month. Quotations on 1,500 lb. drums at the works are now at $1.37½ per 100 lbs. and there is said to be considerable likelihood of further advances on this particular package because of expenses of transportation. Prices remain basically unchanged, however, in a strong market.

Alcohol — Is generally in good condition with prices firm and no indication of any recession from established schedules. Producers are going into the new year with minimum inventories and with the expectations of a good year. A good percentage of contracts from consuming manufacturers have already been made for the year and the situation in general seems good. The lateness of the season, with the absence, thus far, of any considerable cold weather, has resulted in the slowing up of normal movement and December especially was a poor month in this respect. However, the chief explanation appears to lie in the fact that producers miscalculate the time during which cold weather exists. It seems to have been placed too far ahead. However, this will undoubtedly correct itself in time and the market generally, is in good condition, with, it is reported, four million wine gallons less in stock than at the same time last year.

Ammonia — It is reported that practically all large buyers have contracted for their requirements for 1929. Smaller buyers, however, have not contracted readily and there has seemed to be some hesitation on their part. They are evidently preparing to wait until the Spring, when their need is more imperative, and buy then. The market is generally in very sound position, and although no new developments are to be expected, it is thought that a stronger position will probably be felt in the Spring, when demand increases rapidly and many of the smaller buyers come into the market at once in order to secure supplies for their needs. The new production in the

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Tartaric, USP, crys, powd, 300			
.30½	.37	.29½	.32½	300 lb bbls.....lb.	.37	.38	.38	.34½
.....	.85	.85	.85	Tobias, 250 lb bbls.....lb.	.. ..	.85	.85	.85
.....	2.75	2.00	2.60	Trichloroacetic, bottles.....lb.	.....	2.75	2.75	2.75
.....	2.00	2.00	2.00	Kegs.....lb.	.....	2.00	2.00	2.00
.....	1.00	1.00	1.00	Tungstic, bbls.....lb.	1.00	1.25	1.25	1.00
.19	.45	.45	.45	Albumen, blood, 225 lb bbls...lb.	.43	.47	.55	.43
.40	.95	.80	.87	Egg, edible.....lb.	.78	.83	.84	.78
.....	.92	.77	.82	Technical, 200 lb. cases..lb.	.70	.75	.80	.70
1918	.60	.60	.60	Vegetable, edible.....lb.	.60	.65	.65	.60
.....	.50	.50	.50	Technical.....lb.	.50	.55	.55	.50
				Alcohol				
				Alcohol Butyl, Normal, 50 gal				
.....	20	.19	.19½	drs c-l wks.....lb.	.....	.1775	.20	.18½
.....	.20½	.19½	.19½	Drums, lc-l wks.....lb.	.....	.1825	.19½	.18½
.....	.19½	.18½	.19	Tank cars wks.....lb.	.....	.1725	.19	.17½
.....	.....	.....	.....	**Amyl (from pentane)**				
.....	.....	.....	.....	drs c-l wks.....gal.	.....	1.67	2.25	1.75
1.70	1.70	1.70	1.80	Diacetone, 50 gal drs del...gal.	1.70	1.80	1.80	1.70
				Ethyl, USP, 190 pf, 50 gal				
2.50	3.70	3.70	3.70	bbls.....gal.	.....	2.69½	3.70	2.65
.....	.50	.50	.50	Anhydrous, drums.....gal.	.....	.71	.55	.50
				Completely denatured, No. 1,				
1918	.52	.37½	.46	190 pf, 50 gal drs drums extra.....gal.	.....	.49	.52	.48½
				No. 5, 188 pf, 50 gal drs.				
1918	.50	.29	.42	drums extra.....gal.	.....	.48	.50	.43
.....	.46	.25	.40	Tank, cars.....gal.	.....	.46	.46	.41
.....	1.00	1.00	1.00	Isopropyl, ref, gal drs.....gal.	1.00	1.25	1.25	1.00
.....	1.00	1.00	1.00	Propyl Normal, 50 gal dr...gal.	.....	1.00	1.00	1.00
.....	.80	.80	.80	Aldehyde Ammonia, 100 gal dr lb	.80	.82	.82	.80
				Alpha-Naphthol, crude, 300 lb				
1918	.65	.65	.65	bbls.....lb.	.....	.65	.65	.65
				Alpha-Naphthylamine, 350 lb				
1917	.35	.35	.35	bbls.....lb.	.35	.37	.37	.35
				Alum Ammonia, lump, 400 lb				
1.75	3.25	3.15	3.08½	bbls, lc-l wks.....100 lb.	3.25	3.30	3.30	3.25
				Chrome, 500 lb casks, wks				
5.00	5.25	5.25	5.25	.....100 lb.	5.25	5.50	5.50	5.25
				Potash, lump, 400 lb casks				
4.00	3.50	3.10	3.43	wks.....100 lb.	3.10	3.20	3.20	3.10
				Chrome, 500 lb casks wks				
5.00	5.25	5.25	5.25	.....100 lb.	5.25	5.50	5.50	5.25
				Soda, ground, 400 lb bbls				
.....	3.75	3.75	3.75	wks.....100 lb.	.....	3.75	3.75	3.75
17.00	27.00	26.00	26.08	Aluminum Metal, c-1 NY.100 lb.	.....	24.30	26.00	24.30
				Chloride Anhydrous, 275 lb				
.....	.35	.35	.35	drums.....lb.	.35	.40	.40	.35
				Hydrate, 96%, light, 90 lb				
.12	.17	.17	.17	bbls.....lb.	.17	.18	.18	.17
.....	.23	.23	.23	Stearate, 100 lb bbls.....lb.	.18	.22	.24	.18
				Sulfate, Iron, free, bags c-l				
1.25	1.75	1.75	1.75	wks.....100 lb.	.....	1.75	1.75	1.75
.87½	1.40	1.35	1.35½	Coml, bags c-l wks..100 lb.	.....	1.40	1.40	1.40
.....	1.15	1.15	1.15	Aminoazobenzene, 110 lb kegs.lb.	.....	1.15	1.15	1.15
				Ammonium				
.25	.13½	.10	.10½	Ammonia, anhyd, 100 lb cyl...lb.	.13½	.14	.14	.13½
.04¾	.03	.02½	.03	Water, 26°, 800 lb dr del....lb.	.....	.03½	.03	.03
				Bicarbonate, bbls., spot 100 lbs.	6.00	6.50	.....	.....
.....	.21	.21	.21	Bifluoride, 300 lb bbls.....lb.	.21	.22	.22	.21
.08	.08¾	.08¾	.08¾	Carbonate, tech, 500 lb cs...lb.	.08¾	.09	.09	.08¾
				Chloride, White, 100 lb. bbls.				
6.25	5.05	4.85	5.00	wks.....100 lb.	4.45	5.15	5.15	4.45
.05½	.07	.05½	.06	Gray, 250 lb bbls wks....lb.	5.25	5.75	5.75	5.25
.10	.11	.11	.11	Lump, 500 lb cks spot....lb.	.11	.11½	.11½	.11
.....	.15	.15	.15	Lactate, 500 lb bbls.....lb.	.15	.16	.16	.15
.15	.06	.06	.06	Nitrate, tech, casks.....lb.	.06	.10	.10	.06
.....	.27½	.27½	.27½	Persulfate, 112 lb kegs.....lb.	.27½	.30	.38	.27½
				Phosphate, tech, powd, 325 lb				
.....	.18	.18	.18	bbls.....lb.	.....	.18	.18	.18
2.60	2.30	2.55	2.41	Sulfate, bulk c-l.....100 lb.	2.35	2.40	2.90	2.20
2.60	2.55	2.35	2.42	Southern points.....100 lb.	.....	2.45	3.00	2.50
				Nitrate, 26% nitrogen				
				31.6% ammonia imported				
.....	59.70	56.85	57.56	bags.....ton	.....	60.85	60.85	60.85
.....	.55	.55	.55	Sulfocyanide, kegs.....lb.	.55	.60	.60	.55
				Amyl Acetate, (from pentane)				
1.55	2.25	1.90	2.10½	drs.....gal.	1.72	1.80	2.25	1.72
.....	.....	.....	.....	Tech., drs.....gal.	1.65	1.75	.....	....
				Alcohol, see Fusel Oil.....				
.10½	.15½	.15	.15	Aniline Oil, 960 lb drs.....lb.	.15½	.16½	.16½	.15½
.32	.41	.41	.41	Annatto, fine.....lb.	.41	.48	.48	.41
				Anthraquinone, sublimed, 125 lb				
.....	.90	.90	.90	bbls.....lb.	.90	1.00	1.00	.90
				Antimony, metal slabs, ton lots				
.....	.11½	.14	.12	.....lb.	.....	.09½	.12	.09½
.03¾	.15½	.14	.15	Needle, powd, 100 lb cs....lb.	.....	.10	.12	.10
				Chloride, soln (butter of)				
1918	.17	.17	.17	obys.....lb.	.17	.18	.18	.17
.06	.16½	.16½	.16½	Oxide, 500 lb bbls.....lb.	.....	.09½	.12	.09½
.11½	.28	.25½	.26½	Salt, 66%, tins.....lb.				
.18	.20	.16	.17½	Sulfuret, golden, bbls.....lb.	.16	.20	.20	.16
.15	.42	.37½	.38	Vermilion, bbls.....lb.	.38	.42	.42	.38
.14	.18	.18	.18	Archil, conc, 600 lb bbls.....lb.	.17	.19	.19	.17
.08	.12	.12	.12	Double, 600 lb bbls.....lb.	12	.14	.14	.12
.....	.16	.14	.15	Triple, 600 lb bbls.....lb.	.15	.16	.16	.15
.....	.15	.12½	.13½	Argols, 80%, casks.....lb.	.....	.08	.08	.08
.....	.08	.03	.06¾	Coude, 30%, casks.....lb.	.15	.16	.16	.15
.05½	.10½	.10½	.10½	Arsenic, Red, 224 lb kegs, cs..lb.	.10½	.11	.11	.10½
.03	.04	.03½	.04	White, 112 lb kegs.....lb.	.04	.04½	.04	.03¾
.....	14.75	14.75	14.75	Asbestine, c-l wks.....ton	.....	14.75	14.75	14.75



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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1..031

South has had apparently no effect upon the market here. The movement there is in good volume, but it is moving directly into the fertilizer and ammonia-oxidation fields. Both aqua and anhydrous are in good position with prices schedules remaining unchanged.

Ammonium Chloride — It is reported that sales for the past month, exceeded those of November, which, in turn, had been the peak month of the year. In general, it seemed that there had been an increase in sales of gray and a decline in sales of gray during the month, as compared with November, but that the combined total had registered further improvement. Domestic producers, too, have seemed to make progress in their endeavor fully to control the market. A further price concession on white sal ammoniac in carlot quantities has been made, so that the present quotation is at $4.45 per 100 pounds. Other prices continue unchanged.

Ammonium Sulfate — In common with the entire fertilizer group, activity in this commodity has been almost at a standstill during the past month. Prices, however, have been steady and quotations are at $2.35 @ $2.40 per 100 lbs., while at Southern points, quotations are at $2.45 per 100 lbs.

Amyl Acetate — The market has been somewhat unsettled due to the competition between materials from different processes. Technical from fusel oil is quoted at $1.65 @ $1.75 gal. Material from pentane is quoted at $1.72 @ $1.80 gal.

Antimony — Prices have declined considerably during the past month, which has been characterized by consistent lack of buying interest. Metal is now quoted at 9½c lb., while oxide is also lower at 9¾c lb. Needle, powdered, remains unchanged. Shipments of antimony from China during November have been reported as over 1,100 tons.

Barium Chloride — Domestic material has continued in strong position during the past month. Prices continue unchanged with quotations remaining as high as $70.00 ton in small quantities. The imported material has practically been forced out of the market and is only available in small quantities at about $68.00 @ $70.00 per ton.

Benzene — All signs continue to favor record consumption and consequently the market is in a decidedly firm position. October export shipments fell off sharply to 330,286 gallons in contrast to close to 2,000,000 gallons a year ago. The total for the first ten months of 1928, however, was 18,610,177 gallons which

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Barium			
.....	47.50	47.50	47.50	Barium, Carbonate, 200 lb bags wks.....ton	57.00	58.00	57.00	47.00
.13	.12	.12	.12	Chlorate, 112 lb kegs NY...lb.	.12	.12½	.12½	.12
30.00	65.00	57.50	60.70	Chloride, 800 lb bbl wks...ton	.....	65.00	65.00	54.00
1916	.13	.13	.13	Dioxide, 88%, 690 lb drs...lb.	.13	.13½	.13½	.13
.....	.04½	.04½	.04½	Hydrate, 500 lb bbls.....lb.	.04	.04½	.04½	.04½
.05½	.07½	.07½	.07½	Nitrate, 700 lb casks.....lb.	.07½	.08	.08	.07½
17.00	23.00	23.00	23.00	Barytes, Floated, 350 lb bbls wks.....ton	23.00	24.00	24.00	23.00
.....	.....	.....	.....	Bauxite, bulk, mines.....ton	5.00	5.00	5.00	5.00
.39	.40	.37	.39	Beeswax, Yellow, crude bags..lb.	.36	.37	.38	.36
.40	.46	.38	.43	Refined, cases.....lb.	.41	.42	.43	.41
.47½	.58	.56	.57½	White, cases.....lb.	.56	.58	.58	.56
.....	.65	.65	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.65	.70	.70	.65
				Benzene			
.....	.23	.21	.22	Benzene, 90%, Commercial, 8000 gal tanks wks.....gal.	.....	.23	.23	.21
.....	.23	.21	.22½	CP, tanks works.....gal.	.....	.23	.23	.21
.....	.70	.70	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.70	.74	.74	.70
.....	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs..lb.	.....	1.00	1.00	1.00
.....	.....	.....	.....	Benzyl, Chloride, tech drs...lb.	.....	.25	.25	.25
.....	.24	.24	.24	Beta-Naphthol, 250 lb bbl wk.lb	.24	.26	.26	.24
.....	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35	1.35
.....	.63	.63	.63	Tech, 200 lb bbls.....lb.	.63	.65	.65	.63
75.00	80.00	80.00	80.00	Blanc Fixe, 400 lb bbls wks...ton	80.00	90.00	90.00	80.00
				Bleaching Powder			
1.20	2.25	2.00	2.23	Bleaching Powder, 300 lb drs c-1 wks contract....100 lb.	.....	2.25	2.25	2.25
.....	2.25	2.00	2.02	700 lb drs c-1 wks contract .....100 lb.	.....	4.00	2.00	2.00
3.00	3.75	4.75	4.47½	Blood, Dried, fob, NY.....Unit	.....	4.75	5.25	4.65
.....	.....	.....	.....	Chicago.....Unit	.....	4.90	5.35	4.75
.....	.....	.....	.....	S. American shipt.....Unit	.....	4.80	5.05	4.50
.27	.30	.28	.29	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.32	.34	.35	.31
28.50	38.00	29.00	29.04	Bone, raw, Chicago.....ton	29.00	30.00	30.00	29.00
.....	.06	.06	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06
.02½	.08½	.08½	.06	Black, 200 lb bbls.....lb.	.....	.08½	.08½	.08½
20.00	30.00	28.00	29.46	Meal, 3% & 50%, Imp....ton	.....	31.00	37.00	31.00
.04	.04½	.04½	.04½	Borax, crys, 500 lb bbls.....lb.	.02½	.03½	.05	.02½
.07	.11	.11	.11	Bordeaux, Mixture, 16% pwd.lb.	.10½	.12	.12	.10½
.03½	.08	.08	.08	Paste, bbls.....lb.	.08	.10	.10	.08
55.00	28.00	26.00	27.30	Brazilwood, sticks, shpmt.....lb.	26.00	28.00	28.00	26.00
1918	.60	.60	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20	.60
.....	.55	.55	.55	Gold, bulk.....lb.	.55	1.25	1.25	.55
.....	1.60	1.42	1.52	Butyl, Acetate, normal drs lc-1 wks.....gal.	1.40	1.45	1.60	1.40
.....	1.55	1.42	1.47½	Tank, drs wks.....gal.	.....	1.35	1.55	1.35
.....	1.00	1.00	1.00	Secondary, 50 gal drs.....gal.	1.00	1.05	1.05	1.00
.....	.70	.70	.70	Aldehyde, 50 gal drs wks...lb.	.....	.70	.70	.70
.....	.....	.....	.....	Carbitol (see Diethylene Glycol Mono Ethyl Ether)	.....	.....	.....	.....
.....	.34	.34	.34	Propionate, drs.....lb.	.34	.36	.36	.34
.....	.60	.60	.60	Stearate, 50 gal drs.....lb.	.....	.60	.60	.60
.....	.57	.57	.57	Tartrate, drs.....lb	.57	.60	.60	.57
1918	1.50	1 35	1.42	Cadmium, Sulfide, boxes.....lb.	1.35	2.00	2.00	1.35
				Calcium			
.....	3.50	3.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	4.50	4.50	3.50
.....	.07½	.07½	.07½	Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.09	.09	.06
.....	.05	.05	.05	Carbide, drs.....lb.	.05	.06	.06	.05
.....	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00
1918	27.00	27.00	27.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	25.00	27.00	25.00
12.00	21.00	21.00	21.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	20.00	23.00	20.00
.....	52.00	52.00	52.00	Nitrate, 220 lb bbls c-1 NY.ton	.....	52.00	52.00	52.00
.....	.....	.....	.....	Peroxide, 100 lb. drs.....lb.	.....	1.25	.....	.....
.....	.09	.09	.09	Phosphate, tech, 450 lb bbls.lb.	.08	.08½	.08	.07
.....	.....	.....	.....	Camwood, Bark, ground bbls.lb.	.....	.18	.18	.18
.22	.33	.33	.30½	Candelilla Wax, bags.....lb.	.22	.23	.28	.22
.....	.....	.....	.....	Carbitol, (See Diethylene Glycol Mono Ethyl Ether) ..	.....	.....	.....	.....
.....	.08	.08	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08
.....	.12	.12	.12	Black, 100-300 lb cases lc-1 NY.....lb.	.....	.12	.12	.12
.06½	.05½	.05½	.05½	Bisulfide, 500 lb drs lc-1 NY.....lb.	.05½	06	.06	.05½
.....	.06	.06	.06	Dioxide, Liq, 20-25 lb cyl...lb.	.....	.06	.06	.06
.07½	.07	.07	.07	Tetrachloride, 1400 lb drs delivered.....lb.	.06½	.07½	.07½	.07
.50	.50	.50	.50	Carnauba Wax, Flor, bags....lb	.45	.46	.58	.45
.....	.90	.54	.60½	No. 1 Yellow, bags.....lb.	.41	.42	.60	.40
.32	.37	.24	.31	No. 2 N Country, bags.....lb.	.....	.34	.38	.34
.42½	.68	.48	.56	No. 2 Regular, bags.....lb.	.....	.38	.56	.38
.....	.....	.....	.....	No. 3 N. C.....lb	.....	.26	.32	.25
.....	.....	.....	.....	No. 3 Chalky .....lb.	.....	.26	.32	.25½
.....	.18½	.15½	.17	Casein, Standard, ground.....lb.	.14½	.15	.18½	.14½

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

compares with 20,319,702 gallons in the same time during 1927.

The price per gallon of outgoing shipments of benzol during September, 1928, averaged 24c, as compared with 28c in September, 1927.

According to preliminary figures by the Department of Commerce domestic production of benzol apparently dropped in 1927 from the previous year. In 1926 revised figures show that 22,458,617 gallons of both crude and refined and 90,029,972 gallons of motor benzol were produced. Preliminary figures for 1927 indicate a production of 21,939,000 gallons of crude and refined and 87,234,000 gallons of motor benzol.

Bleaching Powder — Very little immediate business has been transacted during the past month, but contracts for 1929 have been reported to be closing in good fashion and in considerable volume. Spot quotations continue at $2.00 @ $2.35 per 100 lbs. carlots, works, and $2.15 @ $2.65 per 100 lbs., less carlot, works.

Blood — Although prices at New York have remained steady during the past month at $4.75 per unit, prices at Chicago and on South American shipments have declined. The former is now quoted at $4.90 per unit and the latter as $4.80 per unit, in a rather quiet market. Exports from Argentina of dried blood during 1927, amounted to 12,358 metric tons, as compared with 10,832 metric tons for 1926. The United States is Argentina's chief market for this and other animal by-products. Exports of bone ash from Argentina, amounted to 1,083 tons in 1927 as compared with 1,719 tons in 1926.

Blues — New price schedule announced for this year makes slight changes in existing quotations on these colors. Contract price is now 32c lb., while 34c lb. has been set as open market quotation.

Borax — Exports of borax amounting to $3,227,000 for the first 10 months of 1928 are 33 per cent greater than for the entire year 1927. Estimates on the full year 1928 indicate nearly a 60 per cent. increase over 1927.

Butyl Acetate — Has been the subject of considerable discussion pro and con during the past month. A dumping investigation had been set and then was indefinitely postponed. The entire subject will be discussed at the tariff hearings and it is probable that this consideration influenced the postponement. Domestic producers claim that they are only "swapping dollars" in an effort to meet foreign competition under present price ranges of butyl alcohol. It is too early yet to judge of the outcome, but it

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	.34	.26	.32½	Celluloid, Scraps, Ivory cs....lb.	.26	.30	.30	.26
.....	.18	.18	.18	Shell, cases.....lb.	.18	.20	.20	.18
.....	.34	.26	.32½	Transparent, cases.....lb.	.30	.32	.32	.30
.....	1.40	1.40	1.40	Cellulose, Acetate, 50 lb kegs..lb.	.....	1.40	1.40	1.40
.....	.03	.03	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03½	.03½	.03
.03	.02½	.02½	.02½	Precip, heavy, 560 lb cks...lb.	.....	.04½	.04½	.04½
.04	.04½	.04½	.04½	Light, 250 lb casks.....lb.	.02½	.03½	.03½	.02½
.....	.18	.18	.18	Charcoal, Hardwood, lump, bulk wks.....bu.	.18	.19	.19	.18
1918	.06	.06	.06	Willow, powd, 100 lb bbl wks.....lb.	.06	.06½	.06½	.06
.....	.04	.04	.04	Wood, powd, 100 lb bbls....lb.	.04	.05	.05	.04
.....	.03	.02½	.03	Chestnut, clarified bbls wks,..lb.	.02½	.03	.03	.02
.04	.02	.01½	.02	25% tks wks.....lb.	.01½	.02	.02	.01½
.....	.05½	.05½	.05½	Powd, 60%, 100 lb bgs wks.lb.	.....	.04 4/5	.04 4/5	.04 4/5
.....	.06½	.06½	.06½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
8.00	8.00	8.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.....	.01¾	.01¾	.01¾	Powdered, bbls.....lb.	.01¾	.02	.02	.01¾
.....	10.00	10.00	10.00	Pulverized, bbls wks.....ton	10.00	12.00	12.00	10.00
14.00	15.00	15.00	15.00	Imported, lump, bulk. ton	15.00	25.00	25.00	15.00
.....	.03	.03	.03	Powdered, bbls.....lb	.03	.03½	.03½	.03
				Chlorine				
1918	.08	.08	.08	Chlorine, cyls lc-l wks contract .....lb.	.08	.09	.09	.08
1917	.05½	.04	.04	Liq tank or multi-car lot cyls wks contract.....lb.	.....	.03½	.03½	.03½
1918	.07	.07	.07	Chlorobenzene, Mono, 100 lb. drs lc-l wks.....lb.	.....	.07	.07	.07
.19	.20	.20	.20	Chloroform, tech, 1000 lb drs..lb.	.20	.22	.22	.20
.....	1.00	1.00	1.00	Chloropicrin, comml, cyls....lb.	1.00	1.35	1.35	1.00
.17	.27	.26	.26½	Chrome, Green, CP.....lb.	.26	.29	.29	.26
.03½	.06½	.06½	.06½	Commercial.....lb.	.06½	.11	.11	.06½
.11	.17½	.16½	.16½	Yellow.....lb.	15½	.16½	.17	.15½
.....	.05	.04½	.04½	Chromium, Acetate, 8% Chrome bbls.....lb.	.04½	.05½	.05½	.04½
1918	.05½	.05½	.05½	20° soln, 400 lb bbls.....lb.	.....	.05½	.05½	.05½
.....	.27	.27	.27	Fluoride, powd, 400 lb bbl..lb.	.27	.28	.28	.27
.....	.34½	.34½	.34½	Oxide, green, bbls.....lb	.34½	.35½	.35½	.34½
.....	9.50	9.00	9.08	Coal tar, bbls.....bbl	9.00	9.50	9.50	9.00
1.00	2.10	2.10	2.10	Cobalt Oxide, black, bags....lb.	2.10	2.22	2.22	2.10
.48	.92	.77	85½	Cochineal, gray or black bag..lb.	.84	.87	.87	.84
.42	.92	.77	.87½	Teneriffe silver, bags.....lb.	.....	.86	.86	.86
				Copper				
13.75	13.57½	12.90	12.97	Copper, metal, electrol...100 lb.	.....	17.00	17.00	12.90
.13½	.16½	.16½	.16½	Carbonate, 400 lb bbls.....lb.	.16	.17½	.17½	.16
.....	.28	.28	.28	Chloride, 250 .lb bbls.....lb.	.....	.28	.28	.28
.....	.48	.48	.48	Cyanide, 100 lb drs.....lb.	.48	.50	.50	.48
.....	.16½	.16½	.16½	Oxide, red, 100 lb bbls.....lb.	.16½	.17	.17	.16½
.28	.18	.17	.18	Sub-acetate verdigris, 400 lb bbls.....lb.	.18	.19	.19	.18
4.00	5.00	4.75	4.91¼	Sulfate, bbls c-l wks...100 lb.	....	5.50	5.50	5.05
13.00	17.00	13 00	13.33½	Copperas, crys & sugar bulk c-l wks.....ton	13.00	14.00	14.00	13.00
.....	1.25	1.25	1.25	Sugar, 100 lb bbls.....100 lb.	1.25	1.35	1.35	1.25
.80	.40	.40	.40	Cotton, Soluble, wet, 100 lb bbls.....lb.	.40	.42	.42	.40
.....	42.00	20.00	33.75	Cottonseed, S.E. bulk c-l...ton	.....	.....	.....	.....
.....	42.00	20.00	29.85	Meal S.E. bulk.....ton	.....	.....	.....	.....
26.50	35.00	21.50	30.38	7% Amm., bags mills...ton	37.50	38.00	38.00	36.00
.23½	.27	.22	.24	Cream Tartar, USP, 300 lb. bbls.....lb.	.26	.27½	.27½	.26
.53	.40	.40	.40	Creosote, USP, 42 lb cbys.....lb.	.40	.42	.42	.40
1918	.20	.20	.20	Oil, Natural, 50 gal drs....gal.	.17	.19	.19	.17
1918	.25	.25	.25	10-15% tar acid.....gal.	.21	.23	.23	.21
				25-30% tar acid.....gal.	.25	.28	.28	.25
1918	.17½	.17½	.17½	Cresol, USP, drums.....lb.	17½	.20	.20	.17½
.07¼	.17	.16	.16½	Cudbear, English.....lb.	.16	.17	.17	.16
.05	.18½	.15	.18	Cutch, Rangoon, 100 lb bales.lb.	.....	.18½	.18½	.18½
.....	.05	.05½	.05½	Borneo, Solid, 100 lb bale...lb.	.06	.07	.07	.06
.....	1.82½	1.67½	1.78¼	Cyanamide, bulk c-l wks Amm. .....lb	.....	1.70	1.75	1.67½
.....	3.92	3.77	3.84½	Dextrin, corn, 140lb. bags 100 lb.	4.77	4.97	5.12	3.77
3.00	3.87	3.72	3.78½	White, 130 lb bgs.....100 lb.	4.72	4.92	5.07	3.72
.05½	.08½	.08½	.08½	Potato, yellow, 220 lb bgs...lb.	.08	.09	.09	.08
.05½	.08½	.08½	.08½	White, 220 lb bags lc-l....lb.	.08	.09	.09	.08
.....	.08½	.08	.08	Tapioca, 200 lb bags lc-l...lb.	.08	.08½	.08½	.08
.....	3.80	3.80	3.80	Diaminophenol, 100 lb kegs...lb				
.....	2.95	2.85	2.93½	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
.....	3.25	3.25	3.25	Dianisidine, 100 lb kegs.....lb.	2.85	2.90	2.90	2.85
.....	.31½	.29½	.30½	Dibutylphthalate, wks.....lb.	.....	.26½	.28	.26½
.....	.55	.55	.55	Dibutyltartrate, 50 gal drs....lb.	.29½	.31½	.31½	.29½
.....	.....	.....	.....	Dichloroethylether, 50 gal drs.lb.	...13	.15	.....	.....
.....	.23	.23	.23	Dichloromethane, drs wks....lb.	.55	.65	.65	.55
.....	2.15	2.15	2.15	Diethylamine, 400 lb drs.....lb.	.23	.25	.25	.23
.....	1.85	1.85	1.85	Diethyl carbonate, drs.....gal.	....	2.15	2.15	2.15
1918	.55	.55	.55	Diethylaniline, 850 lb drs.....lb.	1.85	2.00	2.00	1.85
.....	.20	.20	.20	Diethyleneglycol, drs.....lb.	.55	.60	.60	.55
.....	.....	.....	.....	Mono ethyl ether, drs....lb	.13	.15	.15	.10
.....	.....	.....	.....	Mono butyl ether, drs....lb.	.25	.35	.35	.25
.....	.64	.64	.64	Diethylorthotoluidin, drs.....lb.	.64	.67	.67	.64
.....	.25	.25	.25	Diethyl phthalate, 1000 lb drums.....lb.	.24	.26	.26	.24
.....	.30	.20	.25	Diethylsulfate, technical, 50 gal drums.....lb.	.30	.35	.35	.30
.....	2.60	2.60	2.60	Dimethylamine, 400 lb drs....lb.	.....	2.62	2.62	2.62
1918	.32	.30	.31½	Dimethylaniline, 340 lb drs...lb	.30	.32	.32	.30
.....	.45	.45	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
1918	.15½	.15	.15½	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.....	.18	.18	.18	Dinitrochlorine, 300 lb bbl....lb.	.18	.19	.19	.18
1918	.15	.15	.15	Dinitrochlorobenzene, 400 lb. bbls.....lb.	.15	.16	.16	.15

Prices Current and Comment

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seems almost certain that domestic producers will ask for an increased tariff if the present cost of raw material continues.

Calcium Acetate — Wood distillers are now in the midst of their season of heaviest production and as a result the situation is easing off somewhat. The demand continues good and is reported to be still slightly in advance of production. Quotations continue at $4.50 per 100 lbs. with no sign of any immediate decline, but the situation should soon return to normal.

Domestic production during the first ten months of 1927 amounted to 130, 373, 624 pounds, dropping in 1928 (first ten months) to 105,963,099 pounds, says the Department of Commerce. A low was reached in October of 9,956,891 pounds. Trade reports, however, indicate that producers are gradually getting the production situation in hand. Exports of acetate of lime show a tendency to increase. Although outbound shipments during October, 1928, amounted to only 23,722 pounds, valued at $2,343, as compared with 914,577 pounds in October, 1927, with a value of $36, 048, our total exports for the ten months of 1928, aggregating 11,128,580 pounds, valued at $370,909, represent an increase in exports over the same period in 1927, when 8,879,188 pounds with a value of $331,298 were shipped out. In fact for the first ten months of this year our exports are 30 per cent. greater than for the corresponding period of 1927 and the unit export selling price approximately ten per cent less. Japan takes over half of the United States exports of lime acetate, the United Kingdom purchases about a quarter, and Italy and the Netherlands each consume a tenth of our total shipments.

Carnauba Wax — Has recovered somewhat from the low position reached when last reported. Demand has registered a slight improvement, which has been reflected in prices on three grades. No. 1 yellow is now at 41c @ 42c lb., No. 3 North Country at 26c lb., and No. 3 chalky at 26c lb. Other grades remain unchanged in price.

Casein — This market has remained surprisingly firm during the past month, with prices steady at 14½c @ 15c lb. Usually, at this season of the year the market weakens due to the fact that this is the heavy producing season in the Argentine. But good demand, especially from paper manufacturers, has kept the market exceptionally firm here during December, and while prices are not expected to advance in the near future, the market is in quite a favorable position.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low	
				Dinitronapthalene, 350 lb bbls				
1917	.32	.32	.32	.....lb.	.32	.34	.34	.32
1918	.31	.31	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
1918	.18	.15	.17½	Dinitrotoluene, 300 lb bbls....lb.	.18	.19	.19	.18
.....	1.05	.85	.88	Diorthotolyguanidine, 275 lb bbls wks.....lb	.48	.49	.90	.48
				Dioxan (See Diethylene Oxide)	.....	.....	.....	.....
1918	.48	.45	.45½	Diphenylamine.....lb.	.45	.47	.47	.45
.....	.....	.....	.....	Diphenylguanidine, 100 lb bbl.lb.	.40	.41	.72	.40
.....	.26	.26	.26	Dip Oil, 25%, drums.....lb.	.2C	.30	.30	.26
45.00	49.00	41.00	45.25	Divi Divi pods, bgs shipmt...ton	.....	58.00	62.00	58.00
.02½	.04	.04	.04	Extract.....lb.	.05	.05½	.05½	.0[illegible]
1918	.84	.72	.67½	Egg Yolk, 200 lb cases.....lb.	.80	.82	82	.73
				Epsom Salt, tech, 300 lb bbls				
1.00	2.00	1.75	1.87½	c-1 NY.....100 lb.	1.70	1.75	1.75	1.7
.22	.45	.37	.43	Esther, USP, 1880, 50 lb drs..lb.	.37	.38	38	.3[illegible]
				Ethyl Acetate, 85% Ester, 110				
.....	.90	.90	.90	gal drs.....gal.	1.02	1.05	1.05	.75
.....	1.10	1.03	1.08	99%, gal drums.....gal.	1.22	1.25	1.25	1.10
.....	.....	.....	.....	Acetoacetate, 50 gal drs...gal.	.65	.68	.....	.....
.....	1.05	1.05	1.05	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.....	.50	.50	.50	Bromide, tech, drums.....lb.	.....	.70	.70	.70
.....	.....	.....	.....	Carbonate, 90%, 50 gal drs gal.	1.85	1.90	.....	.....
.....	.22	.22	.22	Chloride, 200 lb. drums....lb.	.....	.22	.22	.22
.....	.....	.....	.....	Chlorocarbonate, 5 gal cbysgal.	.35	.40	.....	.....
.....	.....	.....	.....	Ether, Absolute, 50 gal drs..lb.	.50	.52	.....	.....
.....	3.50	3.50	3.50	Lactate, drums works.....lb.	.30	.35	3.50	3.50
1918	.30	.30	.30	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.....	.45	.45	.45	Oxalate, drums works.....lb.	.45	.55	.55	.45
.....	.....	.....	.....	Oxybutyrate, 50 gal drs. wks. lb.	.30	.36	.36	.30
.....	.70	.70	.70	Ethylene Bromide, 600 lb dr..lb.	.....	.7C	.70	.70
				Chlorhydrin, anhydrous, 50 gal				
.....	.75	.75	.75	drums.....lb.	.75	.85	.85	.75
.....	.15	.11	.11½	Dichloride, 50 gal drums..lb.	.07	.10	.11	.07
.....	.30	.30	.30	Glycol, 50 gal drs wks.....lb.	.27	.30	.40	.25
.....	.....	.....	.....	Mono Butyl Ether drs wks.	.27	.31	.27	.31
.....	.....	.....	.....	Mono Ethyl Ether drs. wks.	.20	.24	.20	.24
				Mono Ethyl Ether Acetate				
.....	.....	.....	.....	dr. wks.	.23	.26	.23	26
1918	.62	.62	.62	Ethylidenaniline.....lb.	.62	.65	.65	.62
8.00	20.00	20.00	20.00	Feldspar, bulk.....ton	20.00	25.00	25.00	20.00
.....	15.00	15.00	15.00	Powdered, bulk works.....ton	15.00	21.00	21.00	15.0C
				Ferric Chloride, tech, crystal				
.....	.07½	.07½	.07½	475 lb bbls.....lb.	..07½	.09	.09	.07
2.80	5.60	4.15	4.69	Fish Scrap, dried, wks.....unit	.....	Nom.	5.50&10	4.90&10
				Acid, Bulk 7 & 3½% delivered				
2.50	3.50	4.24	3.56½	Norfolk & Balt. basis...unit	.....	Nom.	4.75&50	4.00&50
.40	1.10	.90	1.01½	Flavine, lemon, 55 lb cases...lb.	1.10	1.15	1.15	1.10
.40	1.10	.85	.89	Orange, 70 lb cases.....lb.	1.10	1.15	1.15	1.10
.....				Flavseed.....lb.				
.....	25.00	25.00	25.00	Fluorspar, 95%, 220 lb bags...lb.	.. ..	25.00	25.00	25.00
.....	.....	.....	.....	Ex-dock.....ton	.....	.....	.....	.....

Formaldehyde

				Formaldehyde, aniline, 100 lb.	....	.....	.....	.....
.....	.39	.39	.39	drums.....lb.	.39	.42	.42	.39
.08½	.11½	.08½	.10	USP, 400 lb bbls 1c-1 wks...lb.	.....	.09½	.09	.08½
.....	.02½	.02½	.02½	Fossil Flour.....lb.	.02½	.04	.04	.02½
.....	15.00	15.00	15.00	Fullers Earth, bulk, mines...ton	15.00	20.00	20.00	15.00
.....	25 00	25.00	25.00	Imp, powd c-1 bags.....ton	25.00	30.00	30.00	25.00
.....	.17½	.17½	.17½	Furfural, 500 lb drums.....lb.	.17½	.19¼	.19½	.17½
1.10	1.69	1.35	1.59	Fusel Oil, 10% impurities....gal.	.....	1.35	1.35	1.35
.01½	.04	.04	.04	Fustic, chips.....lb.	.04	.05	.05	.04
.....	.20	.20	.20	Crystals, 100 lb boxes.....lb	.20	.22	.22	.20
.06	.09	.09	.09	Liquid, 50°, 600 lb bbls....lb.	.09	.10	.10	.09
.08	.20	.20	.20	Solid, 50 lb boxes.....lb.	.20	.23	.23	.20
12.00	30.00	30.00	30.00	Sticks.....ton	30.00	32.00	32.00	30 00
1918	.50	.50	.50	G Salt paste, 360 lb bbls.....lb.	.50	.52	.52	.50
.12	.20	.20	.20	Gall Extract.....lb.	.20	.21	.21	.20
.04½	.08	.06	.....	Gambier, common 200 lb cs...lb.	.08	.09	.09	.08
1917	.12	.12	.12	25% liquid, 450 lb bbls....lb.	.12	.14	.14	.12
.05½	.23	.11	.17	Singapore cubes, 150 lb bg..lb	.11	.12	.12	.11
.....	.45	.30	.43½	Gelatin, tech, 100 lb casec...lb.	.45	.50	.50	45
.....	3.14	3.14	3.14	Bags, c-1 NY.....100 lb.	3.14	3.24	3.24	3.14
				Glauber's Salt, tech, 250 lb bags				
.60	1.05	1.05	1.05	c-1 wks.....100 lb.	.70	1.00	1.00	.70
				Glucose (grape sugar) dry 70-				
.....	3.24	3.24	3.24	80° bags c-1 NY....100 lb.	3.24	3.34	3.34	3.24
				Tanner's Special, 100 lb bags				
.....	3.14	3.14	3.14	.....100 lb.	.....	3.14	3.14	3.14
.12	.20	.20	.20	Glue, medium white, bbls....lb.	.20	.24	.24	.20
.18	.22	.22	.22	Pure white, bbls.....lb.	.22	.26	.26	.22
.19½	.29	.22	.24	Glycerin, CP, 550 lb drs.....lb.	.15½	.16	.19	.15
.19½	.25	.17	.21½	Dynamite, 100 lb drs.....lb.	.12	.12½	.15	.11½
.....	.....	.....	.....	Saponification, tanks.....lb.	.08½	.08½	.10½	.08½
.....	.....	.....	.....	Soap Lye, tanks.....lb.	.....	.07½	.09½	.07½
.....	15.00	15.00	15.00	Graphite, crude, 220 lb bgs..ton	15.00	35.00	35.00	15.00
.....	.05	.05	.05	Flake, 500 lb bbls.....lb.	.06	.09	.09	.06

Gums

				Gum Accroides, Red, coarse and				
.....	.03½	.03½	.03½	fine 140-150 lb bags....lb.	.03½	.04½	.04½	.03½
.....	.06	.06	.06	Powd, 150 lb bags.....lb.	.06	.06½	.06½	.06
.....	.18	.18	.18	Yellow, 150-200 lb bags..lb.	.18	20	.20	.18
				Animi (Zansibar) bean & pea				
.25	.40	.35	.39	250 lb cases.....lb.	.35	40	.40	.35
.....	.60	.50	.57½	Glassy, 250 lb cases.....lb.	.50	55	.55	.50
				Asphaltum ,Barbadoes				
.05	.09	.09	.09	(Manjak) 200 lb bags..lb	.09	.12	.12	.09
.15	.15	.15	.15	Egyptian, 200 lb cases.....lb.	.15	.17	.17	.15
				Gilsonite Selects, 200 lb bags				
36.00	55.00	55.00	55.00	.....ton	58.00	65.C0	65.00	55.00

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

Chlorine — In some quarters it has been reported that the market is firmer at the lower figures. At any rate, the contract season is considered closed with reports generally indicating that volume about equalled that of the previous year. The schedule has been adhered to in all cases and there has been no evidence of price shading to get business.

Copper Sulfate — During the past month the metal market advanced about 1c lb. with a consequent increase in production costs of copper sulfate of about 25c per 100 lbs. Despite this fact, the market has not advanced thus far although all indications point to such a result within a short time. The advance seems bound to come and the only thing which has forestalled it thus far is the fact that demand has continued light. It is again the higher price of copper, rather than any great demand for the sulfate, which would impel the move. However, at the present writing, quotations continue at $5.50 per hundred pounds, in a very strong market.

Egg Yolk — Has advanced no further since last reported but at present quotations of 80c @ 82c lb., is reported as lacking demand as buyers are to a large degree filling their requirements with shell eggs.

Ethyl Acetate — Continues in good demand and well sustained. Once more the price has advanced in the face of increasing sales to the lacquer trade, so that the inside price is now at $1.02 gal. on large quantities.

Glauber Salts — Although demands from the textile trade have not been very active during the past month, the slackening of activity could be considered seasonal and consequently of little effect upon the market. Imported material still fulfills most of the requirements due to the price advantage which it holds. Is quoted at 70c lb. while domestic material continues to be quoted at $1.00 lb.

Glycerin — Sales during the past month have continued to proceed but slowly. There has been little demand for anti-freeze purposes and the market in general continues inactive. Exports of glycerin from the United States for the nine months ended September 30 increased to 1,778,521 pounds, valued at $224,155, from 354,641 pounds with a value of $84,909 in 1927 for the corresponding period. During the nine months of 1928, imports of glycerin, both crude and refined, dropped to 2,917, 617 pounds, valued at $302,496, from 17,986,065 pounds with a value of $3,159,906 in the same period of 1927. Domestic production during the quarter ended September 30 has been as follows: crude,

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.17½	.26½	.26½	.25	Damar Batavia standard 136, lb cases....lb.	.25½	.26	.26	.22½
.....	.10½	.07	.10	Batavia Dust, 160 lb bags..lb.	.10½	.11	.11	.10½
.....	.18½	.17½	.18½	E Seeds, 136 lb cases....lb.	.17	.17½	17½	.16
.....	.14	.09	.13	F Splinters, 136 lb cases and bags.....lb.	.13	.13½	14½	.13
.....	.34	.33½	.34	Singapore, No. 1, 224 lb casealb.	.30	.30½	.30½	.29½
.14	.22½	.21	.22½	No. 2, 224 lb cases.....lb.	.23½	.24	.24	.20
.08	.14	.11	.12	No. 3, 180 lb bags.....lb.	.13½	.14	.15	.13½
.34	.35	.30	.30	Benzoin Sumatra, U.S.P....120 lb cases.....lb.	.38	.40	.48	.33
.....	.14	.12	.13	Copal Congo, 112 lb bags, clean opaque.....lb.	.14	.15	.15	.14
.12	.08½	.08½	.08½	Dark, amber.....lb.	.08½	.09	.09	.08½
.18	.12½	.12½	.12½	Light, amber.....lb	.12½	.14	.14	.12½
.25	.35	.35	.35	Water white.....lb	.35	.36	.36	.35
				Mastic.....lb.	.60	.62	.65	.58
.15	.16	.16	.16	Manila, 180-190 lb baskets Loba A.....lb.	.17	.17½	.17½	.16
.....	.15	.15	.15	Loba B.....lb.	.16	.16½	.16½	.15
.....	.14½	.13	.13½	Loba C.....lb.	.14	.14½	.14	.13
.....	.16	.16	.16	Pale bold, 224 lb cs.....lb.	.17	.19	.19	.16
.08½	.14	.12	.13	Pale nubs.....lb	.13	.13½	.13½	.12
.....	.07½	.07½	.07½	East Indies chips, 180lb bagslb.	.10	.11	.11	.07½
.....	.....	.....	.....	Pale bold, 180 lb bags..lb.	.20	.21	.21	.17
.....	.17	.17	.17	Pale nubs.....lb.	.15	.16	.16	.14
.....	.....	.....	.....	Pontianak, 224 lb cases....lb.				
.13½	.29	.25	.26½	Pale bold gen No. 1.....lb.	.22	.23	.25½	.22
.07	.19	.13	.15½	Pale gen chips spot.....lb.	.14½	.15	.15	.13
.....	.14	.13	.13½	Elemi, No. 1, 80-85 lb cs...lb.	.13½	.14	.14	.13
.....	.13	.12	.12½	No. 2, 80-85 lb cases.....lb.	.13	.13½	.13½	.13
.....	.13	.11	.11	No. 3, 80-85 lb cases.....lb.	.12	.13	.13	.12
.50	.67½	.57	.63½	Kauri, 224-226 lb cases No. 1 .....lb.	.50	.57	.57	.50
.32	.44½	.38	.41	No. 2 fair pale.....lb.	.35	.38	.38	.35
.07½	.14½	.10	.12	Brown Chips, 224-226 lb cases.....lb.	.10	.12	.12	.10
.....	.42	.38	.40	Bush Chips, 224-226 lb cases.....lb.	.38	.40	.40	.38
.....	.31½	.24½	.25	Pale Chips, 224-226 lb cases .....lb.	.24½	.26	.26	.24½
.19	.27	.25	.25	Sandarac, prime quality, 200 lb bags & 300 lb casks...lb.	.58	.60	.60	.26
1917	.12	.12	.12	Hematine crystals, 400 lb bbls.lb.	.17	.20	.20	.17
1917	.09	.09	.09	Paste, 500 bbls.....lb	.....	.11	.11	.11
.02½	.03½	.03½	.03½	Hemlock 25%, 600 lb bbls wks lb.	.03½	.03½	.03½	.03½
.....	16.00	16.00	16.00	Bark.....ton	.....	16.00	16.00	16.00
.....	.60	.45	.56	Hexalene, 50 gal drs wks.....lb.	.....	.60	.60	.60
.....	.80	.62	.72	Hexamethylenetetramine, drs.lb.	.56	.58	.56	.62
2.60	3.35	2.75	3.08	Hoof Meal, fob Chicago.....unit	.....	4.00	4.00	4.00
.....	3.90	3.00	3.57	South Amer. to arrive....unit	.....	.....	.....	.....
.....	.30	.22	.24	Hydrogen Peroxide, 100 vol, 140 lb cbys.....lb.	.24	.26	.26	.24
1917	.12	.12	.12	Hpvernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
.58	1.28	1.20	1.27	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
.....	.14	.14	.14	20% paste, drums.....lb.	.14	.15	.15	.14
.....	.07½	.07½	.07½	Solid, powder.....lb.	.07½	.08	.08	.07½
.04	.09	.09	.09	Iron Chloride, see Ferric or Ferrous Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
1.12½	2.50	2.50	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.....	.10	.10	.10	Oxide, English.....lb.	.10	.12	.12	.10
.....	.02½	.02½	.02½	Red, Spanish.....lb.	.02½	.03½	.03½	.02½
.....	.85	.85	.85	Isopropyl Acetate, 50 gal drs.gal.	.85	90	.90	.85
.11½	.29	.17	.19	Japan Wax, 224 lb cases.....lb.	.....	.19	.20	.17
.....	60.00	60.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
.....	14.00	13.00	13.33	Lead Acetate, bbls wks...100 lb.				
9.12½	14.00	13.00	13.33	White crystals, 500 lb bbls wks.....100 lb.	13.00	13.50	13.50	13.00
.04¾	.15½	.13½	.13	Arsenate, drs lc-1 wks.....lb.	.13	.15	.15	.13
3.90	7.80	6.20	6.78	Metal, c-l NY.....100 lb.	.....	6.10	6.25	6.25
.07¾	.14	.14	.14	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.17½	.17½	.17½	.17½	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.....	.10½	.08½	.09	Oxide Litharge, 500 lb bbls..lb.	.....	.08½	.08½	.08½
.05½	.11½	.09¼	.10	Red, 500 lb bbls wks.....lb.	.....	.09½	.09½	09½
.05½	.09¾	.09	.09½	White, 500 lb bbls wks...lb.	.....	.09	.09	.09
.05	.09	.08½	.08½	Sulfate, 500 lb bbls wk...lb.	.....	.08½	.08½	.08½
.....	4.50	4.50	4.50	Lime, ground stone bags....ton	.....	4.50	4.50	4.50
.....	1.05	1 05	1.05	Live, 325 lb bbls wks..100 lb.	.....	1.05	1.05	1.05
1918	.15	.15	.15	Lime Salts, see Calcium Salts Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
.03¾	.06½	.06½	.06½	Lithopone, 400 lb bbls lc-1 wks .....lb.	.....	.06½	.06½	.06½
.05	.08½	.08½	.08½	Logwood, 51°, 600 lb bbls.....lb.	.08½	.08½	.08½	.08½
.01½	.03	.03	.03	Chips, 150 lb bags.....lb.	.03	.03½	.03½	.03
.06	.12	.12	.12	Solid, 50 lb boxes.....lb.	.....	.12½	.12½	.12½
15.00	26.00	26.00	26.00	Sticks.....ton	26.00	27.00	27.00	26.00
.....	.07½	.07½	.07½	Lower grades.....lb.	.07½	.08	.08	.07½
.12	.30	.30	.30	Madder, Dutch.....lb.‡	.....	.30	.30	.30
30.00	48.00	48 00	48.00	Magnesite, calc, 500 lb bbl..ton	48.00	50.00	50.00	48.00

Magnesium

1918	.06½	.06	.06	Magnesium Carb, tech, 70 lb bags NY.....lb.	.06	.06½	.06½	.06
.....	37.00	37.00	37.00	Chloride flake, 375 lb drs c-1 wks.....ton	.....	37.00	37.00	37.00
.....	33.00	33.00	33.00	Imported shipment...ton	.....	33.00	33.00	33.00
.....	31.00	31.00	31.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00	31.00
.....	.10	.10	.10	Fluosilicate, crys, 400 lb bbls wks.....lb.	.10	.10½	.10½	.10

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

31,219,694 pounds; dynamite, 10,321,720 pounds and chemically pure, 15,739,372 pounds. Stocks in factories or warehouses at that time were as follows: crude, 20,853,692 pounds; dynamite, 13,720,292 pounds; and chemically pure, 7,280,470 pounds.

Gums — Conditions have eased up somewhat in this market during the past month as additional supplies have become available. Demand has been very good although not quite reaching that peak set during the month of November. Although domestic stocks are in somewhat better condition to meet demand, the market is still very strong. Factors anticipate continued good demand and, if such proves to be the case, a shortage may again make itself felt in the form of higher prices. Benzoin particularly has eased off during the month and quotations are now at 38c @ 40c lb. Mastic also is lower, now being quoted at 60c @ 62c lb., but Sandarac has set a new high price for the year and is quoted at 58c @ 60c lb. with supplies very limited. A new process for extracting kauri gum is reported from New Zealand, by the Department of Commerce. The process is used on roots and limbs of trees strewn on the fields and consists of chipping, followed by treatment with alcohol and benzol. The complete process takes twenty-four hours, and three grades are manufactured, pale, ruby and brown. The products are said to have a lower acid content than the fossil gum.

Mercury — Has been an easier tendency in this market during the past month due to the fact that there has been but light demand which has been taken care of by domestic producers. As a result, there has been a decline in price to $122.00 @ $123.00 per flask. Domestic production is now estimated at about 14,000 to 15,000 flasks per year, while the total consumption is only about 35,000 at 40,000 flasks. As a result, in times of light demand, domestic production will control the market, while under heavy demand, imported material will be the controlling factor.

Methanol — Continues firm and in very good demand. Some shortage still exists but production is gradually increasing and slowly reaching that point at which orders may more readily be filled for immediate shipment. It is expected that the entire situation may be cleared up during the early months of this year. The synthetic material is also coming in in better supply and the situation has eased up considerably, although it is till a seller's market. Prices are expected to remain unchanged.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	.42	.42	.42	Oxide, USP, light, 100 lb bbls .....lb.	.....	.42	.42	.42
.....	.50	.50	50	Heavy, 250 lb bbls.....lb.	.....	.50	.50	.50
.....	.....	.....	.....	Peroxide, 100 lb. cs.....lb.	.....	1.25	.....	.....
.....	.12½	.09½	.11½	Silicofluoride, bbls.....lb.	.09½	.10½	.10½	.09½
.....	.23	.23	.23	Stearate, bbls.....lb.	.23	.25	.25	.23
.20	.24	.24	.24	Manganese Borate, 30%, 200 lb bbls.....lb.	.....	.24	.24	.24
.06	.08	.08	.08	Chloride, 600 lb casks.....lb.	.08	.08½	.08½	.08
.....	.05	.04½	.04½	Dioxide, tech (peroxide) drs.lb.				
.....	.03	.03	.03	Ore, powdered or granular 75-80%, bbls.....lb.	.35 .03	.40 .03½	.50 .03½	.35 .03
.....	.04	.04	.04	80-85%, bbls.....lb.	.04	.04½	.04½	.04
.....	.05	.05	.05	85-88%, bbls.....lb.	.05	.05½	.05½	.05
.....	.07	.07	.07	Sulfate, 550 lb drs NY.....lb.	.07	.07½	.07½	.07
.....	.03½	.03½	.03½	Mangrove 55%, 400 lb bbls..lb.	.03½	Nom.	Nom.	.03½
.....	39.00	34.00	37.54	Bark, African.....ton	.....	35.00	45.00	35.00
8.00	10.00	10.00	10.00	Marble Flour, bulk.....ton	10.00	12.00	12.00	10.00
1916	129.00	99.00	119.09	Mercury metal.....75 lb flask	122.00	123.00	132.00	121.00
1918	.72	.72	.72	Meta-nitro-aniline .....lb.	.72	.74	.74	.72
1918	1.70	1.70	1.70	Meta-nitro-para-toluidine 200 lb bbls.....lb.	1.50	1.55	1.80	1.50
1918	.90	.90	.90	Meta-phenylene-diamine 300 lb bbls.....lb.	.90	.94	.94	.90
1918	.72	.72	.72	Meta-toluene-diamine, 300 lb bbls.....lb.	.72	.74	.74	.72
				Methanol				
.4	.....	.....	.....	Methanol, (Wood Alcohol), drs				
.45	.80	.55	.69	95%.....gal.	.58	.63	.58	.46
.50	.87	.57	.74½	97%, drums c-l.....gal.	.60	.63	.60	.47
.....	.....	.....	.....	Pure, drums lc-l.....gal.	.67	.68	.63	.44
.....	.....	.....	.....	Synthetic, drums c-l...gal.	.57	.64	58	.48
.....	.80	.75	.78	Denat. grd. tanks.....gal.	.60	.62	.75	.45
.....	.95	.95	.95	Methyl Acetate, drums.....gal.	.....	.95	.95	.95
.....	.88	.75	.66	Acetone, 100 gal drums...gal.	.85	.87	.90	.68
.....	1.00	.85	.92½	Anthraquinone, kegs.....lb.	.85	.95	.95	.85
.....	.....	.....	.....	Methyl Cellosolve, (See Ethylene Glycol Mono Methyl Ether	.....	.....	.....	.....
.....	.55	.55	.55	Chloride, 90 lb cyl.....gal.	.55	.60	.60	.55
.....	.03½	.03½	.03½	Mica, dry grd. bags wks.....lb.	65.00	80.00	80.00	65.00
.....	.05½	.05½	.05½	Wet, ground, bags wks.....lb.	110.00	115.00	115.00	110.00
.....	3.00	3.00	3.00	Michler's Ketone, kegs.....lb.	....	3.00	....	....
.....	.70	.70	.70	Monochlorobenzene, drums see, Chlorobenzene, mono.....lb. Monoethylorthotoluidin, drs..lb.	.70	.75	.75	.70
1918	1.05	1.05	1.05	Monomethylaniline, 900 lb dr .....lb.	.....	1.05	1.05	1.05
.....	3.95	3.95	3.95	Monomethylparaminosulfate 100 lb drums.....lb.	3.95	4.20	4.20	3.95
.06½	.06½	.06½	.06½	Montan Wax, crude, bags....lb.	.06½	.07	.07	.06½
.....	.04	.04	.04	Myrobalans 25%, liq bbls.....lb.	.04½	.04½	.04½	.04½
.....	.08	.08	.08	50% Solid, 50 lb boxes.....lb.	.08	.08½	.08½	.08
27.00	43.50	41.00	42.00	J 1 bags.....ton	42.00	43.00	50.00	42.00
27.00	37.00	23.50	35.24	J 2 bags.....ton	32.50	34.00	40.00	32.50
27.00	37.00	30.00	36.62	R 2 bags.....ton	32.50	34.00	40.00	32.50
.10	.21	.18	.19½	Naphtha, v. m. & p. (deodorized) bbls.....gal	.....	.18	.18	.18
.02½	.06	.05½	.05½	Naphthalene balls, 250 lb bbls wks.....lb.	.....	.05½	.06	.05½
.....	.04½	.04½	.04½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½	.04½
.02½	.05	.04½	.04½	Flakes, 175 lb bbls wks.....lb.	.....	.05	.05	.05
.....	.21	.21	.21	Nickel Chloride, bbls kegs....lb.	.21	.24	.24	.21
1918	.35	.35	.35	Oxide, 100 lb kegs NY.....lb.	.35	.38	.38	.35
1918	.09	.08½	.08½	Salt dbl, 400 lb bbls NY....lb.	.09	.09½	.09½	.09
1918	.08½	.08	.08½	Single, 400 lb bbls NY.....lb.	.08½	.09	.09	.08½
.....	1.25	1.10	1.24	Nicotine, free 40%, 8 lb tins, cases.....lb.	1.25	1.30	1.30	1.25
.....	1.10	1.10	1.10	Sulfate, 10 lb tins.....lb.	.98½	1.20	1.20	98½
.....	13.00	13.00	13.00	Nitre Cake, 500 lb bbls.....ton	13.00	14.00	14.00	13.00
.06½	.10½	.09½	.09½	Nitrobenzene, redistilled, 1000 lb drs wks.....lb.	.10½	.10½	.10½	.10½
.....	.40	.40	.40	Nitrocellulose, regular drums wks.....lb.	.40	Nom.	Nom.	40
.....	.55	.55	.55	Low viscosity (soln only) Grade 1 drums, wks.....lb.	.55	Nom.	Nom.	.55
.....	.50	.50	.50	Grade 2 drums, wks.....lb.	.50	Nom.	Nom.	.50
3.05	3.60	3.35	3.53	Nitrogenous Material, bulk..unit	.....	3.85	4.00	3.35
1918	.25	.25	.25	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25	.25
1918	.14	.14	.14	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15	.14
.16	.25	.25	.25	Nutgalls Aleppy, bags.....lb.	.25	Nom.	Nom.	.25
.15	.17	.17	.17	Chinese, bags.....lb	.17	.18	.18	.17
.....	.22	.22	.22	Powdered, bags.....lb	.22	.24	.24	.22
.08	.03½	.03½	.03½	Oak, tanks, wks.....lb	....	.03½	.03½	.03½
.08	.04	.04	.04	23-25% liq., 600 lb bbl wk .lb.	.04	.04½	.04½	.04
.....	45.00	45.00	45.00	Oak Bark, ground.....ton	45.00	50.00	50.00	45.00
.....	20.00	20.00	20.00	Whole.....ton	20.00	23.00	23.00	20.00
.07½	.14½	.13	.13½	Orange-Mineral, 1100 lb casks NY.....lb.	.11½	12½	.13½	.13
.....	2.20	2.20	2.20	Orthoaminophenol, 50 lb kgs..lb.	2.20	2.25	2.25	2.20
.....	2.50	2.35	2.36½	Orthoanisidine, 100 lb drs....lb.	2.35	2.50	2.50	2.35
.....	.50	.50	.50	Orthochlorophenol, drums....lb.	.50	.65	.65	.50
.....	.18	.18	.18	Orthocresol, drums.....lb.	.18	.28	.28	.18
1918	.06	.06	.06	Orthodichlorobenzene, 1000 lb drums.....lb	.06	.07	.07	.06
1918	.32	.32	.32	Orthonitrochlorobenzene, 1200 lb drs wks.....lb.	.32	.35	.35	.32
1918	.13	.13	.13	Orthonitrotoluene, 1000 lb drs wk .....lb.	.17	.18	.18	.17

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

Methyl Acetone — Conditions here are about normal and prices are 5c gal. lower than when last quoted. Less carlot quantities are now quoted at 85c @ 87c gal. in a market which is firm at those prices.

Myrobalans — Recent arrivals have tended to lower prices. J1 is now quoted at $42.00 @ $43.00 ton, while J2 and R2 are at $32.50 @ $34.00 per ton.

Phenol — Somewhat firmer conditions are reported in this market and the basic price in carlot quantities at the works is generally accepted as being 13¼c lb., with a range to 16c lb.

Potassium Bichromate — Good demand and increasing firmness has led producers to advance prices on all grades ¼c lb., effective with the beginning of this year. The market continues strong at the new level.

Potassium Chlorate — Has been in good demand and prices have been advanced to 8½c @ 9c lb. by domestic producers. Imported material continues at 7½c @ 7¾c lb.

Potassium Permanganate — Has advanced 1c lb. during the past month so that quotations now range from 16c @ 16½c lb. While new business has not materialized very rapidly, it is reported that a large percentage of contracts have been made on that basis.

Rosins — The general tendency has been downward during the past month. Large offerings and somewhat slackened demand combined to create lower prices, so that the range is from 5c per unit to 40c per unit lower than when last quoted. The greatest changes have been in the lower grades. However, demand is expected to improve during the coming month and the market closed December in firm condition.

Shellac — Has been experiencing the usual slack period which is said to be generally expected at this season of the year. A prevailing note of quietness has characterized the market and the easy demand has resulted in lower prices. Bone dry is now quoted at 58½c lb., garnet at 45c lb., superfine at 48c lb., and T. N. at 44c lb.

Soda Ash — The contract season is considered closed and preliminary surveys would seem to indicate that there has been a gain over the volume of last year at this time. According to the new schedule, contract prices on ash in bags, carload lots, is $1.32 per 100 pounds on light and $1.37½ per 100 pounds on dense. Spot quotations are 2½c per 100 pounds higher in all instances. These quotations are f. o b. works.

Soda Caustic — About 90 per cent. of the contracts are closed for 1929, ac-

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
1918	.85	.85	.85	Orthonitrophenol, 350 lb dr...lb.	.85	.90	.90	.85
1918	.29	.25	.28	Orthotoluidine, 350 lb bbl lc-1.lb.	.29	.31	.31	.29
1918	.70	.70	.70	Orthonitroparachlorphenol, tins .....lb.	.70	.75	.75	.70
.....	.16	.16	.16	Osage Orange, crystals.....lb.	.16	.17	.17	.16
1918	.07	.07	.07	51 deg. liquid.....lb.	.07	.07½	.07	.07
.....	.14½	.14½	.14½	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
.04½	.06½	.06½	.06½	Paraffin, refd, 200 lb cs slabs 123-127 deg. M. P.....lb.	.06½	.06½	.06½	.06½
.05½	.07½	.07½	.07½	128-132 deg. M.P.....lb.	.07½	.07½	.07½	.07½
.06½	.08	.08	.08	133-137 deg. M.P.....lb.	.08	.08½	.08½	.08
1918	.08½	.08½	.08½	138-140 deg. M.P.....lb.	.08½	.10	.10	.08½
.....	.29	.26	.26½	Para Aldehyde, 110-55 gal drs.lb.	.20½	.23	.28	.20½
1918	1.00	1.00	1.00	Aminoacetanilid, 100 lb bg.lb.	1.00	1.05	1.05	1.00
.....	1.25	1.25	1.25	Aminohydrochloride, 100 lb kegs .....lb.	1.25	1.30	1.30	1.25
.....	.15	.15	.15	Aminophenol, 100 lb kegs...lb.	.....	1.15	1.15	1.15
.....	.50	.50	.50	Chlorophenol, drums.....lb.	.50	.65	.65	.50
.....	.12	.12	.12	Coumarone, 330 lb drums..lb.	.....	.....	.....	.....
.....	2.25	2.25	2.25	Cymene, refd, 110 gal dr...gal.	2.25	2.50	2.50	2.25
1918	.17	.17	.17	Dichlorobenzene, 150 lb bbls wks.....lb.	.17	.20	.20	.17
1918	.53	.50	.50½	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
1917	.52	.52	.52	Nitroaniline, 300 lb bbls wks .....lb.	.48	.49	.49	.4
.....	.32	.32	.32	Nitrochlorobenzene, 1200 lb drs wks.....lb.	.....	.32	.32	.32
1918	2.75	2.75	2.75	Nitro-orthotoluidine, 300 lb bbls.....lb.	2.75	2.85	2.85	2.75
1918	.50	.50	.50	Nitrophenol, 185 lb bbls....lb.	.50	.55	.55	.50
.....	.92	.92	.92	Nitrosodimethylaniline, 120 lb bbls.....lb.	.92	.94	.94	.92
1918	.30	.25	.26	Nitrotoluene, 350 lb bbls...lb.	.....	.30	.30	.30
1918	1.20	1.15	1.18	Phenylenediamine, 350 lb bbls .....lb.	1.15	1.20	1.20	1.15
.....	.40	.40	.40	Toluenesulfonamide, 175 lb bbls.....lb.	.40	.41	.41	.40
.....	.20	.18	.19	Toluenesulfonchloride, 410 lb bbls wks.....lb.	.20	.22	.22	.20
1918	.45	.38	.41	Toluidine, 350 lb bbls wk...lb.	.40	.42	.42	.40
.11	.21	.21	.21	Paris Green, Arsenic Basis 100 lb kegs.....lb.	.....	.25	.25	.20
.....	.19	.19	.19	250 lb kegs.....lb.	.....	.23	.23	.17
.12	.25	.25	.25	Persian Berry Ext., bbls.....lb.	.....	.....	.....	.....
.....	.02½	.02½	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02½	.03	.03	.02½
1918	.18	.16	.17	Phenol, 250-100 lb drums.....lb.	.13½	.16	.13	.20
1918	1.35	1.28	1.35	Phenyl - Alpha - Naphthylamine, 100 lb kegs.....lb.	.....	1.35	1.35	1.35

Phosphate

				Phosphate Rock, f.o.b. mines	.....	.....	.....	.....
3.00	3.00	3.00	3.00	Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
2.00	3.50	3.50	3.50	70% basis.....ton	3.50	3.65	3.65	3.50
.....	4.00	3.85	3.96	72% basis.....ton	4.00	4.15	4.15	4.00
4.00	5.35	5.00	5.09	75-74% basis.....ton	.....	5.00	5.00	5.00
4.00	5.75	5.60	5.71½	75% basis.....ton	.....	5.75	5.75	5.75
5.75	6.25	6.00	6.19	77-76% basis.....ton	.....	6.25	6.25	6.25
4.50	5.50	5.00	5.12½	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
.....	.35	.35	.35	Phosphorous Oxychloride 175 lb cyl.....lb.	.35	.40	.40	.35
.45	.65	.60	.62	Red, 110 lb cases.....lb.	.60	.65	.65	.60
35	.32	.32	.32	Yellow, 110 lb cases wks.lb.	.....	.32	.32	.32
.	.46	.46	.46	Sesquisulfide, 100 lb cs.....lb.	.....	.46	.46	.46
....	.35	.35	.35	Trichloride, cylinders.....lb.	.....	.....	.....	.....
.....	.18	.18	.18	Phthalic Anhydride, 100 lb bbls wks.....lb.	.18	.20	.20	18
.....	40.00	37.00	38 50	Pigments Metallic, Red or brown bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00
1918	.63	.63	.63	Pine Oil, 55 gal drums or bbls Destructive dist.....lb.	.63	.64	.64	.63
.....	8.00	8.00	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.34	.70	.66	.69	Steam dist. bbls.....gal.	.....	.70	.70	.70
37.50	40.00	40.00	40.0C	Pitch Hardwood, ... wks.....ton	40.00	45.00	45.00	40.00
1.50	3.30	3.30	3.30	Plaster Paris, tech, 250 lb bbls .....bbl.	.....	3.30	3.30	3.30

Potash

.04½	.07½	.07½	.07½	Potash, Caustic, wks.....lb.	.....	.07½	.07½	.07½
.....	.07½	.07½	.07½	Imported casks c-1.....lb.	.....	.07½	.07½	.07½
8.36	9.00	9.00	9.00	Potash Salts, Rough Kainit 12.4% basis bulk.....ton	.....	9.00	9.00	9.00
.....	9.50	9.50	9.50	14% basis.....ton	.....	9.50	9.50	9.50
13.58	12.40	12.40	12.40	Manure Salts..... 20% basis bulk.....ton	.....	12.40	12.40	12.40
.....	18.75	18.75	18.75	30% basis bulk .....ton	.....	18.75	18.75	18.75
39.07	36.40	36.40	36.40	Potassium Muriate, 80% basis bags.....ton	.....	36.40	36.40	36.40
25.04	27.00	27.00	27.00	Pot. & Mag. Sulfate, 40% basis bags.....ton	.....	27.00	27.00	27.00
47.57	47 30	47.30	47.30	Potassium Sulfate, 90% basis bags.....ton	.....	47.30	47.30	47.30
.08	.09	.09	.09	Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.09½	.09½	.09½	.09
.06½	.08½	.08	.08½	Bichromate Crystals, 725 lb casks.....lb.	.09½	.09½	.09½	.08½
.....	.12	.11	.11	Powd., 725 lb cks wks....lb.	.13	.13½	.12½	.12

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

cording to reports as the contract season closed. Everything is very well sold up although the situation has eased up somewhat from that which existed during October and November. At that time, it was reported that there was a greater shortage of caustic than at any time since the war. It was apparently due to the fact that oil refiners anticipated a shortage and placed their orders early. Conditions seem about normal now. The new schedule of contract prices in carload lots, f. o. b. works, quotes solid at $2.90 per 100 lbs., and slake and ground at $3.30 per 100 pounds. Spot prices are 5c per 100 pounds higher.

Sodium Bichromate — Makers have advanced prices so that quotations are now at 7½c @ 7¾c lb. Continues in good demand in a firm market.

Sodium Nitrate — The extreme dullness of the market has continued during the past month with practically no business being done and importers are not looking for any activity until after fertilizer companies in the South start their selling campaign. Prices conform to schedule so that quotations for January are at $2.20 per 100 lbs. The dominating factor in the present situation is the stiffness of the freight market, with $6.00 per ton as the current price. With this in mind and the fact that January is always a month of very low tonnage, importers do not wish to bring in surplus stocks as storage is high and the chance of moving stocks is small. With no indication that freight rates will decline and a general feeling that even higher rates may be named, it is unlikely that prices will decline, even though demand for the early part of this year does not meet expectations. The Chilean Minister of Finance is reported to have signed a decree authorizing the payment of a bonus of one Chilean peso ($0.1217) for each metric quintal of sodium nitrate carried by vessels of the Chilean merchant marine. This move has the double objective of fostering Chilean shipping, and encouraging the use of the nitrate in certain portions of the East Atlantic and Pacific Coasts.

Sodium Nitrite — Continues in brisk demand from dyestuffs industries, although without any present indications of advances in price.

Sodium Phosphate — The contract season has closed and these salts have been left in good position with volume about the same as that of last year. All interest at present centers in the tariff hearing on January 16.

Sodium Sulfide — Is said to be in fairly good position, although with some weakness in the concentrated grade,

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	.16	.16	.16	Binoxiate, 300 lb bbls.....lb..	.16	.17	.17	.16
.....	.30	.30	.30	Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30
.03½	.05½	.05½	.05½	Carbonate, 80-85% calc. 800 lb casks.....lb.	.05½	.05½	.05½	.05½
.07¼	.08½	.08½	.08½	Chlorate crystals, powder 112 lb keg wks.....lb.	.08½	.09	.09	.06½
.....	.08¾	.08¼	.08½	Imported 112 lb kegs NY.....lb.	.07½	.07¾	.08½	.07¼
	.05¾	.05½	.05¼	Chloride, crys bbls.....lb.	.05½	.05½	.05½	.05¾
.....	.27	.27	.27	Chromate, kegs.....lb.	.27	.28	.28	.27
.20	.55	.55	.55	Cyanide, 110 lb. cases.....lb.	.55	.57½	.57½	.55
.13	.11½	.11½	.11½	Metabisulfite, 300 lb. bbl..lb.	.11½	.12	.12	.11½
.14	.16	.16	.16	Oxalate, Neut. 225 lb. bbls.lb.	.16	.17	.17	.16
.....	.11	.11	.11	Perchlorate, casks wks.....lb.	.11	.12	.12	11
.09½	.15½	.14½	.14½	Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.16	.16½	.15½	.15
.21	.39	.37½	.38	Prussiate, red, 112 lb keg...lb.	.37	.38	.38	.37
.12½	.18	.18	.18	Yellow, 500 lb casks.....lb.	.18	.18½	.18¼	.18
.....	.51	.51	.51	Tartrate Neut, 100 lb keg...lb.	.....	.51	.51	.51
.....	.25	.25	.25	Titanium Oxalate, 200 lb bbls .....lb.	.....	.25	.25	25
.....	.04	.04	.04	Pumice Stone, lump bags.....lb.	.04	.05	.05	.04
.04½	.04½	.04½	.04½	250 lb bbls.....lb.	.04½	.06	.06	.04½
.01½	.02½	.02½	.02½	Powdered, 350 lb bags.....lb.	.02½	.03	.03	.02½
2.65	3.75	3.75	3.75	Putty, commercial, tubs..100 lb.	.....	.03¾	.03¼	.03¼
4.25	5.50	5.50	5.50	Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½
.....	3.00	1.50	.94	Pyridine, 50 gal drums.....gal.	.....	1.50	1.50	1.50
.10½	.13	.12	.12½	Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	.13¾	.13¼	.13
.02½	.03	.03	.03	Quebracho, 35% liquid tks....lb.	.03½	.04	.04	.03
.....	.03½	.03½	.03½	450 lb bbls c-l.....lb.	.03½	.04½	.04½	.03½
.....	.04	.04	.04	35% Bleaching, 450 lb bbl..lb.	.04½	.05½	.05½	.04
.04½	.05	.04¾	.04½	Solid, 63%, 100 lb bales cif.lb.	.05½	.05½	.05¼	.05
.....	.05	.05	.05	Clarified, 64%, bales.....lb.	.....	.05½	.05½	.05
.01½	.06½	.06½	.06½	Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.06	.05½
.02½	.10	.10	.10	Solid, 100 lb boxes.....lb.	.10	.13	.13	.10
22.00	14.00	14.00	14.00	Bark, Rough.....ton	.....	14.00	14.00	14.00
.....	34.00	34.00	34.00	Ground.....ton	34.00	35.00	35.00	34.00
1918	.45	.45	.45	R Salt, 250 lb bbls wks.....lb.	.45	.46	.46	.45
.03	.18	.18	.18	Red Sanders Wood, grd bbls..lb.	.....	.....	.....	.....
1918	1.25	1.25	1.25	Resorcinol Tech, cans.....lb.	1.25	1.35	1.35	1.25
.27	.67	.57	.59	Rosin Oil, 50 gal bbls, first run .....gal.	.....	.57	.57	.57
.38	.72	.62	.64	Second run.....gal.	.....	.62	.62	.62
				Rosin				
4.37½	13.00	8.50	10.08½	Rosins, 600 lb bbls 280 lb...unit B.....	.....	9.25	9.75	8.20
4.42½	13.00	8.50	10.17	D.....	.....	9.25	9.80	8.25
4.42½	13.15	8.50	10.23	E.....	.....	9.28	9.95	8.60
4.47½	13.20	8.50	10.49	F.....	.....	9.30	10.10	8.65
4.47½	13.25	8.50	10.58½	G.....	.....	9.33	10.10	8.75
4.47½	13.30	8.50	10.65	H.....	.....	9.35	10.10	8.75
4.55	13.35	8.55	10.79½	I.....	.....	9.35	10.15	8.80
4.49½	14.80	8.65	11.05	K.....	.....	9.80	10.15	8.85
5.47½	15.00	8.80	11.15½	M.....	.....	9.95	10.30	8.85
6.12½	15.85	9.15	11.62	N.....	.....	10.40	11.00	9.15
6.67½	16.60	10.50	12.58	WG.....	.....	11.35	11.65	10.15
6.92½	18.55	12 00	14.34	WW.....	.....	12.35	12.65	10.40
.....	24.00	24.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.....	.07	.07	.07	Lump, imported, bbls. ....lb.	.07	.08	.08	.07
.05½	.09	.09	.09	Selected bbls.....lb.	.09	.12	.12	.09
.02½	.02	.02	.02	Powdered, bbls.....lb.	.02	.05	.05	.02
.02½	.04½	.04½	.04½	Sago Flour, 150 lb bags.....lb.	.04½	.05	.05	.04½
.60	.90	.90	.90	Sal Soda, bbls wks.....100 lb.	.....	.....	.....	.....
11.00	19.00	19.00	19.00	Salt Cake, 94-96% c-l wks...ton	19.00	20.00	20.00	19.00
8.00	15.00	15.00	15.00	White, 87% wks.....ton	15.00	17.00	17.00	15.00
.04½	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½
.....	.01½	.01½	.01½	Satin, White, 500 lb bbls.....lb.	.....	.01½	.01½	.01½
.18½	.66	.47	.57	Shellac Bone dry bbls.....lb.	.....	.58½	.62½	.49
.15	.57	.41	.48	Garnet, bags.....lb.	.....	.45	.55	.45
.14½	.65	.40	.52½	Superfine, bags.....lb.	.....	.48	.58	47
.15½	.37	.57	.49	T. N. bags.....lb.	.....	.44	.55	.42
1918	.50	.50	.50	Schaeffer's Salt, kegs.....lb.	.53	.57	.57	.53
.....	6.00	6.00	6.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
.....	15.00	15.00	15.00	Refined, floated bags.....ton	22.00	30.00	30.00	22.00
.....	32.00	32.00	32.00	Air floated bags.....ton	.....	.....	.....	.....
.....	55.00	55.00	55.00	Extra floated bags.....ton	32.00	40.00	40.00	32.00
10.00	15.00	15.00	15.00	Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	22.00	22.00	15.00
				Soda				
.67½	1.32½	1.32½	1.32½	Soda Ash, 58% dense, bags c-l wks.....100 lb.	.....	1.40	1.40	1.40
.57½	2.14	2.04	2.12	58% light, bags .....100 lb.	.....	134½	2.29	2.04
.....	1.32½	1.32½	1.32½	Contract, bags c-l wks.100 lb.	.....	1.32	1.32½	1.32½
2.50	4.16	4.06	4.14½	Soda Caustic, 76% grnd & flake drums.....100 lb.	.....	3.35	4.21	4.16
.....	3.76	3.66	3.74¾	76% solid drs.....100 lb.	.....	2.95	3.91	3.76
.....	3.00	3.00	3.00	Contract, c-l wks.....100 lb.	.....	2.90	3.00	3.00
.03½	.04½	.04½	.04½	Sodium Acetate, crystals, 450 lb bbls wks.....lb.	.04½	.05	.05	.04½
.....	.19	.18	.18½	Arsenate, drums.. .....lb.	.....	.....	.....	.....
.....	1.00	1.00	1.00	Arsenite, drums.....gal.	.....	.....	.....	.....
1.00	2.41	2.41	2.41	Bicarb , 400 lb bbl NY..100 lb.	.....	2.41	2.41	2.41

due to heavy competition from imported material.

Starch — Prices on corn have remained unchanged during the month despite the fact that easier conditions exist in the grain market. The market, too, has been inactive with most of the interest centering about hearings on proposed tariff revisions which are expected to effect this group as well as others of similar nature coming under the province of "farm relief".

Toluol — It is reported that production is sold to capacity for the present month and that no material will be available for spot shipment. Xylol is still being substituted in many instances which has had the effect of increasing sales and aiding the position of this market also. Prices, however, remain unchanged, and it is thought that production will soon meet demand.

Turpentine — Despite declines in the rosin market and rather liberal offerings due to efforts of sellers to get cleaned up before the turn of the year, this market has maintained itself rather well during the past month. Spirits are practically at the same level as when last reported, being at 61c @ 66½c gal. Steam distilled, however, has lost a little ground, and is quoted at 57c gal. The market had sagged considerably by the middle of the month, but a strong recovery in the closing days of the month put it back at about the same price level as a month ago. All factors look for a higher market during the month.

Valonia — Arrivals in considerable quantities during the past month resulted in somewhat lower prices. Beard is now quoted at $55.00 per ton and mixture at $45.00 per ton.

OILS AND FATS

Chinawood Oil — During the past month but little activity has evidenced itself in this market. There have been slight price variations from week to week on shipments from the Coast but the net result has been to leave the price situation about the same as it was last month. Coast tanks are quoted at 13½c @ 13⅝c lb., while barrels at New York remain at 14½c @ 15c lb. Recurrent holidays and the fact that the paint and varnish trade in general use this season for inventory purposes, are the underlying reasons for curtailed activity. Latest reports from China indicate that unsold stocks at Hankow at the end of November were approximately 600 tons. Total November exports from Hankow totaled 6,593,125 pounds, the share of the United States being 3,845,765 pounds, while Europe

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.04½	.06½	.06½	.06½	Bichromate, 500 lb cks wks..lb.	.07½	.07½	.07 .06½
.02½	.08½	.08½	.08½	Bisulfite, 500 lb bbl wks....lb.	.....	.04	.04 .04
.60	1.30	1.30	1.30	Carb. 350 lb bbls NY...100 lb.	1.30	1.35	1.35 1.30
.07½	.06½	.06½	.06½	Chlorate, 112 lb kegs wks...lb	.06½	.07	.06½ .05½
.....	12.00	12.00	12.00	Chloride, technical.....ton	12.00	13.00	13.00 12.00
.22	.20	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.....	.20	.20 .20
1918	.08½	.08½	.08½	Fluoride, 300 lb bbls wks...lb.	.08½	.09	.09 .08½
.....	.22	.22	.22	Hydrosulfite, 200 lb bbls f.o.b. wks.....lb.	.22	.24	.24 .22
.....	.05	.05	.05	Hypochloride solution, 100 lb cbys.....lb.	.....	.05	.05 .05
1.40	2.65	2.65	2.65	Hyposulfite, tech, pea crys 375 lb bbls wks....100 lb.	2.65	3.05	3.05 2.65
1.30	2.40	2.40	2.40	Technical, regular crystals 375 lb bbls wks... 100 lb.	2.40	2.65	2.65 2.40
.....	.70	.45	.62	Metanilate, 150 lb bbls.....lb.	.....	.45	.45 .45
.....	.02½	.02½	.02½	Monohydrate, bbls.....lb.	.....	.....	....
1918	.55	.55	.55	Naphthionate, 300 lb bbl...lb.	.55	.57	.57 .55
2.12½	2.67	2.25	2.52½	Nitrate, 92%, crude, 200 lb bags c-1 NY.....100 lb.	.....	2.20	2.45 2.12½
.05½	.08½	.08	.08	Nitrite, 500 lb bbls spot ...lb.	.07½	.08	.08½ .07½
.....	.25	.25	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb	.25	.27	.27 .25
.....	.20	.20	.20	Oxalate Neut, 100 lb kegs..lb.	.20	.23	.23 .20
.....	3.90	3.90	3.90	Paratoluene, tri-sodium, tech. 100 lb bbls c-1....100 lb.	.....	3.90	3.90 3.90
.....	.08	.08	.08	Sulfonate, 175 lb bbls....lb.	.08	.09	.09 .08
.19	.21	.21	.21	Perborate, 275 lb bbls.....lb.	.21	.22	.22 .21
2.12½	3.25	3.25	3.25	Phosphate, di-sodium, tech. 310 lb bbls.....100 lb.	3.25	3.55	3.55 3.25
.....	.....	.....	.....	tri-sodium, tech, 325 lb bbls.....100lb.	3.90	4.00	....
.....	.69	.69	.69	Picramate, 100 lb kegs.....lb.	.69	.72	.72 .69
.08½	.12	.11	.12	Prussiate, Yellow, 350 lb bbl wks.....lb.	.12	.12½	.12½ .12
.....	.13½	.13½	.13½	Pyrophosphate, 100 lb keg..lb.	.13½	.14	.14 .13½
.02	1.20	1.20	1.20	Silicate, 40 deg clear 55 gal drs wks.....100 lb.	1.20	1.45	1.45 1.20
.02	.85	.85	.85	40 deg turbid 55 gal drs wks.....100 lb.	.85	1.10	1.10 .85
.....	.04½	.04½	.04½	Silicofluoride, 450 lb bbls NY .....lb.	.05	.05½	.05 .05
.....	.48½	.48½	.48½	Stannate, 100 lb drums.....lb.	.48½	.49	.49 .48½
.....	.20	.20	.20	Stearate, bbls.....lb.	.18	.22	.29 .18
.....	.16	.16	.16	Sulfanilate, 400 lb bbls.....lb.	.16	.18	.18 .16
.....	.02½	.02½	.02½	Sulfate Anhyd., 550 lb bbls c-1 wks.....lb.	.02½	.02½	.02½ .02½
.01½	.02½	.02½	.02½	Sulfide, 30% crystals, 440 lb bbls wks.....lb.	.02½	.02½	.02½ .02½
.....	.03½	.03½	.03½	62% solid, 650 lb drums 1c-1 wks.....lb.	.03½	.04	.04 .03½
.02½	.03½	.03½	.03½	Sulfite, crystals, 400 lb bbls wks.....lb.	.03½	.03½	.03½ .03½
.....	.40	.40	.40	Sulfocyanide, bbls.....lb.	.40	.50	.50 .40
.....	.85	.80	.82½	Tungstate, tech, crystals, kegs .....lb.	.80	.85	.85 .80
1917	.40	.35	.37	Solvent Naphtha, 110 gal drs wks.....gal.	.35	.40	.40 .35
1918	.01½	.01½	.01½	Spruce, 25% liquid, bbls.....lb.	.....	.01½	.01½ .01½
1918	.01	.01	.01	25% liquid, tanks wks.....lb.	.....	.01	.01 .01
.....	.02	.02	.02	50% powd., 100 lb bag wks.lb.	.02	.02½	.02½ .02
.....	3.22	3.07	3.14½	Starch, powd., 140 lb bags .....100 lb.	4.07	4.27	4.42 3.07
1.99	3.12	2.97	3.03	Pearl, 140 lb bags.....100 lb.	3.97	4.17	4.32 2.97
.05½	.06	.04½	.05½	Potato, 200 lb bags .....lb	.05½	.06½	.06½ .05½
.05½	.06½	.06½	.06½	Imported bags.....lb	.05½	.06½	.06½ .05½
.05½	.08	.06	.07	Soluble.....lb.	.08	.08½	.08½ .08
.07	.09½	.09	.09½	Rice, 200 lb bbls.....lb.	.09½	.10	.10 .09½
.04½	.06½	.06½	.06½	Wheat, thick bags.....lb.	.06½	.07	.07 .06½
.04½	.09½	.09½	.09½	Thin bags.....lb.	.09½	.10	.10 .09½
1918	.07½	.07½	.07½	Strontium carbonate, 600 lb bbls wks.....lb	.07½	.07½	.07½ .07½
.07½	.08½	.08	.08	Nitrate, 600 lb bbls NY....lb.	.08½	.09	.09 .08½
.....	.....	.....	.....	Peroxide, 100 lb drs.....lb.	.....	1.25	....

Sulfur

1.85	2.05	.205	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-1.....100 lb.	.....	2.05	2.05 2.05
.....	18.00	18.00	18.00	Crude, f.o.b. mines.... ton	18.00	19.00	19.00 18.00
.....	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-1 NY.....100 lb.	.....	2.40	2.40 2.40
2.00	2.50	2.50	2.50	Heavy bags c-1.....100 lb.	.....	2.50	2.50 2.50
2.20	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-1 NY.....100 lb.	.....	3.45	3.45 3.45
1.85	2.65	2.65	2.65	Roll, bbls 1c-1 NY.....100 lb.	2.65	2.85	2.85 2.65
.....	.05	.05	.05	Sulfur Chloride, red, 700 lb drs wks.....lb.	.05	.05½	.05½ .05
.....	.03½	.03½	.03½	Yellow, 700 lb drs wks.....lb.	.03½	.04½	.04½ .03½
.....	.08	.08	.08	Sulfur Dioxide, 150 lb cyl....lb.	.08	.08½	.08½ .08
.....	.17	.17	.17	Extra, dry, 100 lb cyl.....lb.	.17	.19	.19 .17
.....	.65	.65	.65	Sulfuryl Chloride, 600 lb dr...lb	.10	.65	.65 .10
.....	.11	.11	.11	Stainless, 600 lb bbls.....lb.	.11	.11½	.11½ .11
.....	.05	.05	.05	Extract, 450 lb bbls.....lb.	.05½	.06	.06 .05½
.....	130.00	130.00	130.00	Sicily Leaves, 100 lb bg...ton	.....	130.00	130.00 130.00
62.00	80.00	72.00	73.75	Ground shipment.....ton	.....	72.00	72.00 72.00
40.00	55.00	55.00	55.00	Virginia, 150 lb bags.....ton	55.00	60.00	60.00 55.00
.....	12.00	12.00	12.00	Talc, Crude, 100 lb bgs NY..ton	12.00	15.00	15.00 12.00
15.00	16.00	16.00	16.00	Refined, 100 lb bgs NY..ton	16.00	18.00	18.00 16.00
15.00	30.00	30.00	30.00	French, 220 lb bags NY...ton	30.00	35.00	35.00 30.00
.....	38.00	38.00	38.00	Refined, white, bags....ton	38.00	45.00	45.00 38.00
35.00	40.00	40.00	40.00	Italian, 220 lb bags NY...ton	40.00	50.00	50.00 40.00
.....	50.00	50.00	50.00	Refined, white, bags....ton	50.00	55.00	55.00 50.00

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1928 $1.047 - Dec. 1928 $1.031

received 2,747,360 pounds. Total exports January 1-November 30 were 114,277,240 pounds compared with 90,722,170 pounds for the corresponding period of last year. Of this amount, the United States took 93,416,040 pounds, compared with 67, 965,975 pounds, and Europe 20,859,300 pounds, compared with 21,387,520 pounds.

Coconut Oil — The general tendency has been upward during the past month. This has been due not so much to demand, as to the fact that supplies are rather short, thus giving the market considerable strength. Ceylon is now quoted at 9½c @ 9⅝c lb. in barrels and 8¾c lb. in tanks at New York; Cochin at 10c lb. in barrels and 9⅜c lb. in tanks at New York; while Manila is at 8⅛c @ 8¼c lb. in tanks at the Coast and 9½c lb. in barrels and 8⅝c @ 8¾c lb. in tanks at New York.

Corn Oil — Due to easier position which has existed during the past month in the grain market, crude oil at the mills is now lower than when last reported, being quoted at 8½c lb., a decline of ¼c lb. during the month.

Cottonseed Oil — Has been steady and firm during the past month with just a slight price variation upward since last reported. Crude oil remains unchanged at 8½c lb., while PSY on spot is at 10.12c lb. and Feb.-April about 10.30c lb. Cottonseed crushed in the three-month period August 1 to November 30, totaled 2,267,308 tons, compared with 2,407,884 tons for the same period in 1927, and cottonseed on hand at mills November 30 totaled 1,323,367 tons, compared with 1,118,165 tons a year ago, according to the Census Bureau. Cottonseed products manufactured during the same period and on hand November 30 included: Crude oil produced 700,723,223 pounds, compared with 746,108,476, and on hand 143,079,618 pounds, compared with 165, 070,471. Refined oil produced 509,707,652 pounds, compared with 533,591,129, and on hand 322,857,460 pounds, compared with 416,140,651.

Linseed Oil — In common with other oils in this group, the demand here has been very slow during the past month. Quotations are lower so that five-barrel lots are now at 10.4c lb.; barrels at 10c lb.; and tanks at 9.2c lb. However, both of these latter prices are subject to a two-point shading on firm bids. Reports from the Argentine indicate that a good crop of seed is to be expected there which will perhaps do much to offset the smallness of the North American yield. Reports from England indicate that a scarcity exists in supplies of spot oil, but supplies here at present seem adequate. Flaxseed available for use in the northern hemisphere between now and the Argentine

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
3.50	4.85	4.00	4.41	Tankage Ground NY.....unit	.....	4.75&10	5.10&10	4.65&10
3.10	5.25	3.75	4.29	High grade f.o.b. Chicago.unit	.....	4.80&10	4.80&10	3.90&10
.....	5.25	4.00	4.38½	South American cif.....unit	.....	4.80&10	5.00&10	4.60&10
.02	.04½	.04½	.04½	Tapioca Flour, high grade bgs.lb.	.04½	.05	.05	.04½
.01½	.03½	.03½	.03½	Medium grade, bags.....lb.	.03½	.04	.04	.03½
.....	.26	.26	.26	Tar Acid Oil, 15%, drums...gal.	.26	.27	.27	.26
.....	.29	.29	.29	25% drums.....gal.	.29	.30	.30	.29
.....	.07	.07	.07	Coke Oven, tanks wks.....lb	.07	.08	.08	.07
6.50	16.00	13.50	14.87½	Kiln Burnt, bbl.....bbl.	.....	13.50	13.50	13.50
6.76	18.50	13.50	15.38½	Retort, bbls.....bbl.	13.50	15.00	15.00	13.50
.75	1.15	1.15	1.15	Terra Alba Amer. No. 1, bags or bbls mills.....100 lb.	1.15	1.75	1.75	1.15
.60	1.50	1.50	1.50	No. 2 bags or bbls...100 lb.	1.50	2.00	2.00	1.50
.80	2.00	2.00	2.00	Imported bags.....100 lb.	.02	.02½	.02½	.02
.....	.20	.20	.20	Tetralene, 50 gal drs wks.....lb.	.....	.20	.20	.20
.....	.22	.22	.22	Thiocarbanilid, 170 lb bbl.....lb.	.22	.24	.24	.22
.11½	.20½	.17½	.19	Tin Bichloride, 50% soln, 100 lb bbls wks.....lb.	.....	.14½	.17½	.14½
.23	.48	.41½	.45	Crystals, 500 lb bbls wks...lb.	.....	.36½	.41½	.36½
.....	.71½	.58	.65	Metal Straits NY.....lb.	.....	.48	.58	.48
.36	.75	.70	.71	Oxide, 300 lb bbls wks.....lb.	.....	.53	.75	.53
.....	.48	.35½	.39	Tetrachloride, 100 lb drs wks .....lb.	.....	.30½	.35½	.30½
.....	.40	.40	.40	Titanium Oxide, 200 lb bbl...lb.	.....	.40	.40	.40
.....	.13½	.13½	.13½	Pigment, bbls wks.....lb.	.13½	.14	.14	.13½
1918	.40	.40	.40	Toluene, 110 gal drs wks.....lb.	.....	.45	.45	.40
.....	.35	.35	.35	8000 gal tank cars wks.....lb.	.....	.40	.45	.35
1918	.90	.90	.90	Toluidine, 350 lb bbls.....lb.	.90	.94	.94	.90
1918	.31	.31	.31	Mixed, 900 lb drs wks.....lb.	.31	.32	.32	.31
.....	.85	.85	.85	Toner Lithol, red, bbls.....lb.	.85	.90	.90	.85
.....	.75	.75	.75	Para, red, bbls.....lb.	.70	.75	.80	.70
1918	1.75	1.75	1.75	Toluidine.....lb.	1.70	1.75	1.80	1.70
.....	3.60	3.60	3.60	Triacetin, 50 gal drs wks.....lb.	3.60	3.90	3.90	3.60
.....	.....	.....	.....	Triethanolamine, 50 gal drs... lb.	.55	.60	.....	.....
.....	.36	.36	.36	Tricresyl Phosphate, drs.....lb.	.36	.50	.50	.36
.....	.70	.69	.69	Triphenylguanidine.....lb.	.69	.73	.73	.69
.....	.70	.70	.70	Phosphate, drums.....lb.	.70	.75	.75	.70
.....	2.50	2.50	2.50	Tripoli, 500 lb bbls.....100 lb.	2.50	3.00	3.00	2.50
.49	.86	.53½	.65	Turpentine Spirits, bbls.....gal.	.61	.66½	.66½	.50½
.34	.76	.46	.55	Wood Steam dist. bbls....gal.	.....	.57	.59	.46
.....	.18	.18	.18	Urea, pure, 112 lb cases.....lb.	.18	.20	.20	.18
.....	70.00	66.00	61.52	Valonia Beard, 42%, tannin bags.....ton	.....	55.00	76.00	55.00
.....	49.50	39.00	43.96	Cups, 30-31% tannin.....ton	.....	Nom.	55.00	53.00
.....	68.00	43.00	48.52	Mixture, bark, bags.....ton	.....	45.00	64.00	45.00
.55	1.95	1.55	1.94½	Vermilion, English, kegs.....lb.	2.00	2.10	2.10	1.75
.....	.....	.....	.....	Vinyl Chloride, 16 lb cyl.....lb.	.....	1.00	.....	.....
.....	59.00	49.50	53.71	Wattle Bark, bags.....ton	.....	49.75	76.00	49.75
.....	.05½	.05½	.05½	Extract 55%, double bags ex-dock.....lb.	.....	.06½	.06½	.05½
.45	1.25	1.25	1.25	Whiting, 200 lb bags, c-1 wks .....100 lb.	.....	1.25	1.25	1.25
.....	13.00	13.00	13.00	Alba, bags c-1 NY.....ton	.....	13.00	13.00	13.00
.55	1.35	1.35	1.35	Gilders, bags c-1 NY...100 lb.	.....	1.35	1.35	1.35

Zinc

.....	.06½	.06½	.06½	Zinc Ammonium Chloride powd., 400 lb bbls.....lb.	5.25	5.75	.05½	5.85
.08½	.09½	.09½	.09½	Carbonate Tech, bbls NY..lb.	.09½	.10	.10	.09½
.04½	.06	.06	.06	Chloride Fused, 600 lb drs. wks.....lb.	.....	.06	.06	.06
.04½	.06½	.06½	.06½	Gran., 500 lb bbls wks.....lb.	.06½	.06½	.06½	.06½
.....	3.00	3.00	3.00	Soln 50%, tanks wks...100 lb.	.....	3.00	3.00	3.00
.....	.40	.40	.40	Cyanide, 100 lb drums.....lb.	.40	.41	.41	.40
.05½	.09	.09	.09	Dust, 500 lb bbls c-1 wks...lb.	.....	.09	.09	.09
.....	7.35	6.40	6.66	Metal, high grade slabs c-1 NY.....100 lb.	.....	6.45	6.40	6.07½
.05½	.07½	.07½	.07½	Oxide, American bags wks..lb.	.07½	.07½	.07½	.07½
.06½	.10½	.10½	.10½	French, 300 lb bbls wks..lb.	.09½	.11½	.12½	.10½
.....	.....	.....	.....	Perborate, 100 lb drs.....lb.	.....	1.25	.....	.....
.....	.....	.....	.....	Peroxide, 100 lb drs.....lb.	.....	1.25	.....	.....
.02½	.03½	03	.03½	Sulfate, 400 bbl wks.....lb	.03½	.03½	.03½	.03½
.....	.30	.30	.30	Sulfide, 500 lb bbls.....lb.	.30	.32	.32	.30
.....	.29	.29	.29	Sulfocarbolate, 100 lb keg..lb.	.29	.30	.30	.29
.....	.38	32	.37	Xylene, 10 deg tanks wks....lb.	.....	.33	.32	.32
.....	.36	.30	.35	Commercial, tanks wks....lb.	.30	.32	.32	.30
1918	.35	.35	.35	Xylidine, crude.....lb.	.....	.38	.38	.38
.....	.02½	.02½	.02½	Zirconium Oxide, Nat. kegs..lb.	.02½	.03	.03	.02½
.....	.45	.45	.45	Pure kegs.....lb.	.45	.50	.50	.45
.....	.08½	.08	.08	Semi-refined kegs.....lb.	.08	.10	.10	.08

Oils and Fats

.08	.14	.13	.13	Castor, No. 1, 400 lb bbls....lb.	.13	.13½	.14½	.13
.08	.14	.12½	.13½	No. 3, 400 lb bbls.....lb.	.12½	.13	.14	.12½
.....	.18	.17	.18	Blown, 400 lb bbls.....lb.	.14	.15	.17	.14
.06½	.31	.13½	.19	China Wood, bbls spot NY...lb.	.14½	.15	.17	.14½
.05½	.18	.12½	.16½	Tanks, spot NY.....lb.	.....	Nom.	.14½	.14½
				Coast tanks, Jan.....lb	.13½	.13½	.14½	.12½
1918	.12	.12	.12	Cocoanut, edible, bbls NY....lb.	.....	.10½	.11½	.10½
.09½	.09½	.09	.09	Ceylon, 375 lb bbls NY....lb.	.09½	.09½	.10	.09½
.08½	.08½	.08	.08½	8000 gal tanks NY.....lb.	.....	.08½	.09	.08½
.10½	.10½	.09½	.10	Cochin, 375 lb bbls NY....lb.	.....	.10	.10½	.09½
.05½	.10	.08½	.09½	Tanks NY.....lb.	.....	.09½	.09½	.08½
.....	.09½	.08½	.09½	Manila, bbls NY.....lb.	.....	.09½	.10	08½
.....	.08½	.08½	.08⅝	Tanks NY.....lb.	.08½	.08½	.08½	.08
.....	.08½	.08	.08½	Tanks, Pacific Coast.....lb.	.08½	.08½	.08½	.07½

Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average--$1.00 - Jan. 1927 $1.042 - Jan. 1829 $1.047 - Dec. 1928 $1.031

harvesting season will be below that of last year. The November estimate of production in North America, according to the United States Department of Agriculture, is 23,525,000 bushels, or 7,930,000 bushels below the production in 1927. The United States crop is estimated at 20,026,000 bushels, compared with 26, 570,000 bushels in 1927. Canada's crop, according to the last official estimate, is 3,499,000 bushels, compared with 4,885, 000 bushels last year. Approximately 50% of the flaxseed used by the United States is imported. It is pointed out by the department that the price of flaxseed at Minneapolis in October reached a level above the October average of last year. In Buenos Aires, however, prices were about equal to those of last year. The price at Minneapolis advanced more rapidly also than the price at Winnipeg, so that the margin between American and foreign flax prices became marked.

Olive Oil — Foots has become very scarce on spot and as a result has advanced considerably in price, now being quoted at 10⅝c @ 11c lb., with apparently no indication of easier conditions existing within the near future. Denatured oil is at $1.28 @ $1.30 per gallon, and edible at $1.95 @ $2.00 per gallon.

Palm Oil — Although prices in the primary markets are practically unchanged, the great scarcity at present existing in the spot market has driven local quotations to quite a high level. Lagos is now quoted at 8¾c @ 9c lb., and Niger at 8¼c @ 8⅝c lb., depending upon seller, quantity, and conditions in the market at the particular time.

Perilla Oil — While there is little likelihood of any lower prices during the coming month, Feb.-March quotations on Coast tanks are lower at 13¼c lb. Meanwhile quotations are unchanged and supplies at the Coast comparatively scarce. This is probably due to the fact that shipments from Manchuria have been smaller this year, amounting to only 298,200 pounds, valued at $32,118 in the first nine months of 1928. This compares with 1,207,000 pounds, valued at $151,662 during corresponding period of last year.

Soy Bean Oil — Exports from Manchuria to this country have declined as compared with corresponding period of last year. For the first nine months of 1928, our imports amounted to 3,145,953 pounds, valued at $202,996, as compared with 3,387,424 pounds, valued at $206,201 for the same period of last year. Quotations here are unchanged.

Tallow — Extra has declined during the past month and is now quoted at 9c @ 9¼c lb. Edible is also lower at 10¼c @ 10½c lb.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Cod, Newfoundland, 50 gal bbls			
.36½	.66	.63	.64½	.....gal.	.63	.64	.69	.63
.36½	.59	.59	.59	Tanks NY.....lb	.....	.60	.63	.60
				Cod Liver see Chemicals.....				
1918	.06	.06	.06	Copra, bags.....lb.	.....	.05½	.06½	.05½
.06½	.11	.07	.10	Corn, crude, bbls NY.....lb.	.....	.10½	.11	.10
.06½	.09½	.07	.08½	Tanks, mills.....lb.	.....	.08½	.10	.08½
1916	.14	.10½	.12	Refined, 375 lb bbls NY....lb.	.....	.11½	.12½	.11½
1916	.12	.11	.11	Tanks.....lb.	.....	.10½	.11½	.10½
.06	.09½	.06½	.08	Cottonseed, crude, mill.....lb.	.....	.08½	.09½	.07½
.07½	.11½	.08 1/5	.10	PSY, 100 lb bbls spot.....lb.	.....	.1012	10.65	.09½
				Feb.—Apr.....lb.	.....	.1030	10.75	.09½
				Degras, American, 50 gal bbls				
.02½	.04½	.04½	.04½	NY.....lb.	.04½	.05	.05	.04½
.03½	.04½	do	do	English, brown, bbls NY...lb.	.....	.05½	.05½	.04½
.03½	.05½	.05½	.05½	Light, bbls NY.....lb.	.....	05½	.05½	.05½
				Greases				
.04½	.07½	.06	.06⅝	Greases, Brown.....lb.	.....	.08½	.08½	.07
.05½	.08	.06½	.07½	Yellow.....lb.	.08½	.08½	.08½	07
.06½	.10½	.08½	.09⅜	White, choice bbls NY,....lb.	.....	.11	.11	.09½
.....	.....	.....	.....	Herring, Coast, Tanks.....gal.	.....	Nom.	.42½	.40
.009	.09½	.09	.09⅛	Horse, bbls.....lb.	.09½	Nom.	Nom.	.09½
.13	.16½	.14½	.15½	Lard Oil, edible, prime.....lb.	.....	.16	.16½	.15½
.....	.13½	.10½	.12	Extra, bbls.....lb.	.....	.13½	.13½	.12
.09	.12½	.10⅛	.11½	Extra No. 1, bbls.....lb.	.....	.13	.13	.11
.078	.11 4/5	.10 2/5	.11	Linseed, Raw, five bbl lots....lb.	.....	.104	10.8	10.0
.077	.11 9-10	.09 6-10	.10⅛	Bbls c-l spot.....lb.	.. ..	.10	10.4	9.6
.076	.10½	.09	.09 7-12	Tanks.....lb.	.....	.092	9.6	8.8
.....	.09½	.09½	.09½	Lumbang, Coast.....lb.	.....	.09½	.09½	.09½
.33½	.47½	.44	.46⅔	Menhaden Tanks, Baltimore.gal.	.....	.48	.48	.40
.....	.90	.10	.36⅔	Blown, bbls NY.....lb.	.....	.09	.09	.09
.43	.70	.67	.68½	Extra, bleached, bbls NY. gal.	.....	.70	.70	.67
.39	.66	.63	.62	Light, pressed, bbls NY....gal.	.63	.64	.64	.63
.37	.66	.69	.67½	Yellow, pressed, bbls NY gal.	.66	.67	.67	.66
				Mineral Oil, white, 50 gal bbls				
				.....gal.	.40	.60	.60	.40
				Russian, gal.....gal.	.95	1.00	1.00	.95
.14	.18½	.14½	.17½	Neatsfoot, CT, 20° bbls NY..lb.	.....	.19	.19	.18½
.....	.13½	.10½	.12	Extra, bbls NY.....lb.	.....	.13½	.13½	.12
.....	.16½	.12½	.14½	Pure, bbls NY.....lb.	.....	.15½	.16½	.15½
.08	.18½	.10	.13½	Oleo, No. 1, bbls NY .....lb.	.....	.11½	.17½	.11½
.07½	.17	.08½	.12	No. 2, bbls NY.....lb.	.....	.11	.15½	.11
.07½	.14	.08½	.10½	No. 3, bbls NY.....lb.	.....	.10	.14	.10
.83	1.75	1.40	1.48½	Olive, denatured, bbls NY...gal.	1.28	1.30	1.40	1.18
1918	2.00	2.45	2.15	Edible, bbls NY.....gal.	1.95	2.00	2.00	1.75
.07½	.10½	.08¾	.09⅛	Foots, bbls NY.....lb.	.10½	.11	.11	.09½
.08½	.09½	.09	.09½	Palm, Kernel, Casks.....lb.	.08½	.09	.09½	.08½
.07	.08½	.07½	.08	Lagos, 1500 lb casks.....lb.	.08½	.09	.09½	.07½
.....	.08½	.07½	.07½	Niger, Casks.....lb.	.08½	.08½	.08½	.07
.....	.14½	.12	.12	Peanut, crude, bbls NY.....lb.	.....	Nom.	.12½	.12
.....	.15½	.14½	.15	Refined, bbls NY.....lb.	.14½	.15	.17	.14½
.....	.16½	.12½	.14	Perilla, bbls NY.....lb.	.20	.21	.21	.13
.....	.14½	.10	.12	Tanks, Coast.....lb.	.....	.14½	.15½	.10½
.....	1.70	1.70	1.70	Poppyseed, bbls NY.....gal.	1.70	1.75	1.75	1.70
.63	1.05	1.00	1.01	Rapeseed, blown, bbls NY...gal.	1.03	1.04	1.06	1.01
.....	.90	.82	.87	English, drms.NY.....gal.	.....	.86	.92	.83
.....	.85	.76	.80⅝	Japanese, drms.NY.....gal.	.....	.85	.90	.81
.06½	.10	.09	.09	Red, Distilled, bbls.....lb.	.10½	.10½	.10½	.09½
.....	.09½	.08½	.08⅝	Tanks.....lb.	.....	.09½	.09½	.08
.....	.50	.50	.50	Salmon, Coast, 8000 gal tks..gal.	.42	.44	.50	.42
.....	.47	.43	.45	Sardine, Pacific Coast tks....gal.	.....	.50	.50	.41
.08½	.13	.11½	.12½	Sesame, edible, yellow, dos....lb.	.12	.12½	.13½	.12
.....	.14	.14	.14	White, dos.....lb.	.12½	.13	.15	.12½
.34	.40	.40	.40	Sod, bbls NY.....gal.	.....	.40	.40	.40½
.....	.09½	.09½	.09½	Soy Bean, crude.....				
.06½	.....	.....	.....	Pacific Coast, tanks.....lb.	.....	.09½	.09½	.09
.....	.12½	.10½	.12	Soy Bean, crude, bbls NY....lb.	.12½	.12½	.12½	.12
.....	.11	.10½	.10½	Tanks NY.....lb.	.....	.10½	.10½	.10½
.....	.13	.12	.13	Refined, bbls NY.....lb.	.13½	.13½	.13½	.13½
				Sperm, 38° CT, bleached, bbls				
.70	.85	.84	.84½	NY.....gal.	.84	.85	.85	.84
.68	.82	.79	.80½	45° CT, bleached, bbls NY.gal.	.79	.80	.80	.79
				Stearic Acid, double pressed dist				
1916	.13½	.11½	.12	bags.....lb.	.18	.18½	.18½	.11
				Double pressed saponified bags				
1916	.14	.11½	.12	.....lb.	.18½	.19	.19	.11½
1916	.15½	.13½	.14	Triple, pressed dist bags...lb.	.20	.20½	.20½	.13½
.07½	.13	.08½	.11	Stearine, Oleo, bbls.....lb.	.10½	.10½	.12½	.09½
.06	.09	.07½	.08	Tallow, City, extra loose.....lb.	.09	.09½	.09½	.08½
.07	.11	.08½	.10	Edible, tierces .....lb.	.10½	.10½	.10½	.09½
.09	.10½	.08½	.10	Tallow Oil, Bbls, c-1 NY...lb.	.....	.12½	.12½	11½
.09½	.12½	.10	.11	Acidless, tanks NY.....lb.	.....	.11½	.11½	.10½
.....	.08½	.07½	.07½	Vegetable, Coast mats.....lb.	.08	Nom.	Nom.	.08
.04½	.11	.11	.11	Turkey Red, single bbls.....lb.	.11	.12	.11	
.05½	.14	.14	.14	Double, bbls.....lb.	.14	.16	.16	.14
				Whale, bleached winter, bbls				
.50	.78	.78	.78	NY.....gal.	.78	.80	.80	.78
.52	.80	.80	.80	Extra, bleached, bbls NY..gal.	.80	.82	.82	.80
48	.76	.76	.76	Nat, winter, bbls NY.....gal.	.76	.78	.78	.76

Foreign Trade Opportunities

Chemical products	‡34964	Marseille, France	Agency.
Do	*34997	Palermo, Italy	Both.
Chemicals	‡34943	Shanghai, China	Agency.
Chemicals, industrial	*34947	Augsburg, Germany	Do.
Do	†35063	Amritsar, India	Do.
Fertilizer	‡34964	Marseille, France	Do.
Paints, oils, and varnishes	*35031	Prince Rupert, Canada.	Do.
Paints, plastic	†34945	Copenhagen, Denmark.	Purchase.
Paper-making chemicals	*35031	Prince Rupert, Canada.	Agency.
Rosin	†34942	Melbourne, Australia	Do.
Do	†34946	Do	Do.
Balsam, copaiba	*34894	Meissen, Germany	Purchase.
Borax powder, 5 to 10 tons	*34845	Rotterdam, Netherlands.	Do.
Carbon black and other chemical products.	†34853	Paris, France	Agency.
Caustic soda and soda ash	*34778	Santiago, Colombia	Purchase.
Celluloid, sheet	†34851	Barcelona, Spain	Agency.
Chemicals, heavy, for soap industry.	‡34902	Habana, Cuba	Do.
Chemicals, industrial	*34829	Aschaffenburg, Germany.	Do.
Do	*34895	Rome, Italy	Purchase.
Chemicals, industrial, and fertilizers.	†34843	Paris, France	Both.
Chemicals, photographic	*34846	Baghdad, Iraq	Either.
Pitch, stearine, large quantities.	*34840	Hamburg, Germany	Purchase.
Pyroxylin plastic sheets	†34851	Barcelona, Spain	Agency.
Rosin	*34850	Trieste, Italy	Do.
Tar, pitch and pine	*34842	Halifax, Nova Scotia	Either.
Thorium oxide (ThO_2)	†34847	Stockholm, Sweden	Purchase.
Toluol, pure, 500 gallons	*34848	Monterrey, Mexico	Do.
Zinc oxides, crude	*34844	Vienna, Austria	Purchase.
Carbon black	†35094	Hamburg, Germany	Do.
Cholesterol, pure	†35095	Berlin, Germany	Either.
Cleaners, windshield and eye glass.	†35200	Stockholm, Sweden	Purchase.
Dyes for silk and cotton	*35201	Damascus, Syria	Both.
Enamel, white	*35180	San Jose, Costa Rica	Purchase.
Fertilizers	‡35096	Athens, Greece	Sole agency.
Fungicides	†35093	Prague, Czechoslovakia.	Either.
Gum arabic	†35098	Milan, Italy	Agency.
Paint materials	†35098	Do	Do.
Photographic chemicals	†35158	San Juan, P. R.	Purchase.
Pyroxylin sheets	†35161	Melbourne, Australia	Do.
Rosin and turpentine	†35098	Milan, Italy	Agency.
Dyes, aniline	*35286	Belgrade, Yugoslavia	Both.
Dye, bleach, and finish for textiles.	*35254	Hamilton, Canada	Purchase.
Celluloid sheets, for automobiles.	*35287	Milan, Italy	Both.
Zinc oxide (99.5 purity)	*35285	Liverpool, England	Either.

Editor's Correspondence

(*Continued from page 28*)

Second—that membership to the association be subscribed for at the rate of $50.00 for a firm membership and $25.00 for an individual membership.

Third—that a program and topics for discussion be prepared in advance, ready to be submitted at the convention.

Fourth—it is hereby guaranteed that any money paid in by these memberships, will be held intact and refunded in full in the event it is found the convention cannot be held and is not possible, and if there is not sufficient interest to warrant the forming of such an association.

Fifth—that the appointment of a general secretary be ultimately secured and retained to look after the interests of the association.

This is written very briefly simply with the idea of getting it before the chemical distributing trade, and inviting their replies and reaction to the idea. The writer will be pleased to set forth in fuller detail a program which he thinks warrants the forming of such an association, and his own ideas concerning it, if same is thought desirable. Certainly there is a definite and crying need, if we are to solve our future, for some co-ordinated, continuing organization of this character where there may be a forum presented for the discussion of problems that effect our own particular future, and it certainly would act in a very fine manner to eliminate a great deal of suspicion that now seems to be attached at times to our fraternity.

C. T. THOMPSON, *President*
Thompson-Hayward Chemical Co.

Local Reports *from our Correspondents at the Principal Consuming Centers of Industrial Chemicals*

California

Illinois

CHICAGO

General business conditions have been good during the past month with collections fair. Of the chemicals, stearic acid, red oil and alcohol have been most active. The less car lot schedule on alcohol in the market in this city has been lowered four cents a gallon during the month.

BOSTON

With regard to general market conditions in New England, there seems to be a decidedly better feeling especially with regard to the renewing of contracts for 1929. Less difficulty is met with in renewing contracts, the general feeling among the buyers being that with the prospects of better business in sight for 1929, prices are likely to be firm, with a tendency toward higher prices during the coming year. Glauber's Salt, which has been selling at extremely low prices for the past two years, has advanced approximately 20c per hundred pounds, and little difficulty is being met in renewing contracts at the advanced prices. Collections are very good.

KANSAS CITY

There has been some slack in business due to inventory and the season, but December was quite active. Alcohol is still moving rather slowly. Credits remain in fairly good condition though a developing tendency to discount bills past their terms of sale is a growing difficulty with which we are having to contend and the policy seems to be one created by general lack of rigidness in insisting on terms of sale, by competitive houses in general. It really constitutes a reduction in price and seems to be a growing evil created by so many convention prices.

ST. LOUIS

As is customary at the tail end of the year, business has been rather slow, large buyers preferring to hold off until after inventory. Because of the continued mild weather, the demand for anti-freeze materials was decidedly sub-normal. During the past month there have been no important price changes with the exception of an increase of 2½c in the price of Nickel Salts, effective on January 1st. Naval Stores have remained steady, with only a small demand. Collections continue fair.

NEWARK

The month of December as usual tapered off toward the last few days pending inventories and annual clean-ups. Outside of that, the month has been excellent in the color and chemical trades.

Massachusetts

Michigan

Missouri

Local Reports *from our Correspondents at the Principal Consuming Centers of Industrial Chemicals*

Missouri---(cont.)

New Jersey

New York

The demand for products is substantial and prices are firm with advances taking place. Bichromates are very stiff. The demand for alkalies is strong with no weakness in price. Alcohols are moving readily in a seasonal way, cheap goods practically being eliminated and manufacturers schedules now almost universally observed. Toluol still remains scarce and difficulties are experienced in finding sufficient to supply the demand and price is higher than it has been for a long period of time. The textile trade is as usual dull and there is less hope for better prospects in the immediate future than in any other basic industry. We go into 1929 with excellent prospects of substantial business from the beginning of the calendar year and from the outlook business should remain good for several months at least.

CLEVELAND

"Seasonable Decline" seems to express the situation in all industries in Cleveland at this particular time. This is true not only in the steel and automobile parts industries here but with lacquer and paint manufacturers as well. In discussing this matter with executives of various concerns, we do not find any note of pessimism. They attribute the slight decline in production to the fact that most buyers do not want to stock up over the end of the year and are keeping inventories as low as possible. Every one seems optimistic over 1929, especially the first six months. Linseed oil is being quoted at 8.9c to nine cents and firm at these levels. However, there is no buying activity. China Wood Oil is quoted at 13⅜c to 13½c, but no activity. Denatured Alcohol is firm at current levels which have not changed during the past month. C. P. Glycerine remains at the same level; namely, 15½c lcl quantities.

PHILADELPHIA

General business in Philadelphia territory for the month of December, considering that it is a holiday month and that inventory is usually taken at the end of the month, has been good. Most of the manufacturers as usual at this time of the year have assumed a hand to mouth attitude but even at that the orders are coming more frequently and in better volume than they did last year. Buyers have assumed greater inclination to book up next years business with more confidence and most everyone feels that business for 1929 is going to be exceptionally good.

Ohio

Rhode Island

Index To Advertisers

"WE"—Editorially Speaking

As we go through the press hearings on the chemical schedules of the tariff are beginning in Washington, and it is appropriate that tariff revision from two different angles should be the subject of articles in this issue. Whoever has been in close contact with tariff or tax matters in Washington, has always carried away a wholesome respect for Reed Smoot's expert knowledge of the intricacies of this type of legislation. Fortunately the Senator from Utah, recognized by his associates as an expert in these matters, is fully aware of the key position occupied by chemical products in modern industry and it is a matter of real satisfaction to us to be able to present to our readers an exclusive interview with him in which he sets forth his views of the probable changing schedules.

Hit and miss tariff revision, inspired wholly by selfish motives and put through Congress by the well-known process of You-vote-for-me-and-I'll-vote-for-you system of log rolling, appears to be pretty definitely a thing of the past. There is obviously a determined intent on the part of Congress to disturb existing schedules as little as possible and to make such revisions as are necessary only upon the basis of ascertained facts. In this work the Government's own statistics of imports and exports are obviously going to play a big part for the first time. Congress now has available not only these figures, but in the case of numerous debatable schedules much additional data collected by the Tariff Commission which will be invaluable. With the co-operation of the Tariff Commission staff, the figures of the Department of Commerce covering chemical imports are analyzed in this issue in such a way as to present graphically the relationship existing between our Foreign chemical commerce and the tariff rates. While undoubtedly no group of industries in the country is at present subjected to such quick shifts in the competitive position as are the chemical manufacturers, nevertheless, there are few industrial groups which can present their tariff arguments more tellingly than are set forth in these interesting statistics.

Perfumes are not ordinarily classed as industrial chemicals, and it is rather startling to learn that there are more pounds of aromatic chemicals consumed for industrial uses than by the toilet goods trade. The masking of a bad smell, as in the case of a metal polish, glue, or fly spray is quite as important a part of odor as is my lady's scent bottle, But this is not all. The distinctive smell of peat smoke in Scotch and Irish homespuns, the distinguishing odor of Russian leather, even the delicious aroma of Havana tobacco—all are simulated and each finds a growing use today. Dr. Kunz, having surplus energy left after the management of his company and his signal services to the Synthetic Organic Chemical Manufacturers' Association has become a pioneer in studying these new industrial uses of perfume materials. Not only is he opening up a new field for his company's products, but he is developing in a number of interesting fields an essentially novel sales appeal.

FEBRUARY FEATURES

CASH INVESTMENT

in chemical developments and expansions will be discussed by John M. Weiss, who for fifteen years was in closest contact with the research and development work of the Barrett Co. and who during the past six years has broadened his experience by consulting practice.

CHEMICAL WARFARE

in perfecting its technique during the decade since the War has developed products and methods of industrial importance which will be reviewed by Major General Fries, Chief of Chemical Warfare Service, U. S. Army.

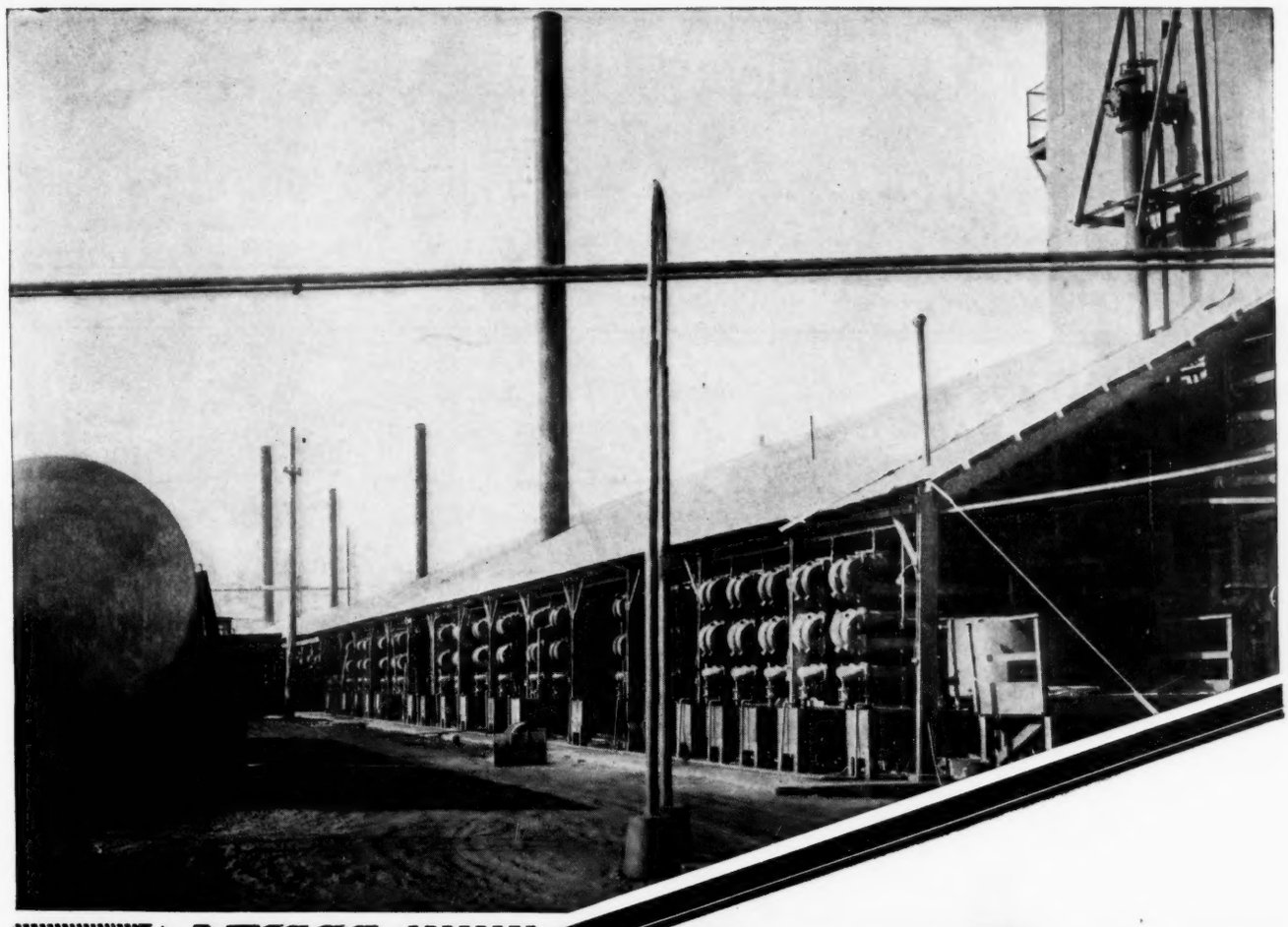
PHTHALIC ANHYDRIDE

is a coal-tar chemical in which American manufacturers have assumed a position of world dominance and yet greater conquests are forecast by J. M. Selden, Jr. one of our pioneer makers.

We were interrupted during the writing of the last paragraph by a telephone call from the Conference Room of one of the large chemical companies where their forces are in annual convention assembled. The company proposed to send to the homes of each of its officers, department heads and branch office managers, and salesmen a copy of some chemical paper, in order that each might most conveniently and at their leisure keep themselves informed of current chemical developments. By unanimous vote, the assembly chose Chemical Markets.

The most decorated chemical executive in America is Charles H. MacDowell of the Armour Fertilizer Works. His friends in Chicago say that if Siam doesn't send him a new order or Jugo-Slavia another cross for Christmas, he becomes firmly convinced that there is no Santa Claus. His many honors have come to him because there are few men in the world who are better informed on two subjects of world-wide economic importance today. Mr. MacDowell is a recognized authority on the chemical raw materials of the world, their sources and their uses, and he is no less expert in the field of economic agriculture. To every fertilizer executive, Muscle Shoals has been a serious problem throughout the last decade. Mr. MacDowell sees the problem broadly as a common one of the chemical industry in this country, and he interprets plainly the meaning of this great power plant in terms of chemicals and of markets.

Carl H. Hazard who would be hailed by "Time" as a "nabob of chemical advertising agents" deserves the palm for the best chemical story of the month. This energetic gentleman, although addicted to chicken sandwiches with sarsaparilla and other weird combinations for lunch, is probably as directly responsible as any one individual for the remarkable improvement during the past ten years in the character and appearance of chemical advertising. On this subject he speaks with authority, and his final dictum is: "What chemical advertising lacks is sex appeal".



Carbon Bisulphide

DOW

A Partial List of Dow Industrial Chemicals

Aniline Oil
Calcium Chloride
Carbon Bisulphide 99.9%
Carbon Tetrachloride 99.9%
Caustic Soda
Chloroform, Commercial
Phenol
Sodium Sulphide

Carbon Bisulphide of Dow manufacture brings new high standards of quality, uniformity and purity to the basic manufacturing processes of hundreds of industrial manufacturers. In the manufacture of dyes, rayon, rubber, and numerous other products, the use of this Dow product proves of definite, tangible value.

Try Dow Carbon Bisulphide in your basic processes. Let us quote on your requirements.

THE DOW CHEMICAL COMPANY
MIDLAND - - - MICHIGAN

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